NONVERBAL COMMUNICATION IN ARTIFICIAL INTELLIGENCE AND EMOTIONAL RECOGNITION TECHNOLOGY

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ABBREVIATIONS

SA   : Sentiment Analysis
AI   : Artificial Intelligence
VM   : Data Mining
See.   : See
ibid.   : Mentioned work
C.   : Skin
Trans.   : Translator
Ed.   : Editor
s.   : Page
ss.   : Page to Page
etc.   : And similar

SOME TERMS USED IN THE STUDY

Signal: Sign.
Profile Analysis: Profiling, creating profile, expressing profile, profile identification, personality analysis.
Baiting: Changing behavior with the aim of deception.
Forer-Barnum Effect: Similarities common to all humans.
Proactive: Activist, action-oriented.
Reactive: Inactive.
Complex: A state of confusion that interferes with the unconscious common sense.
Projection: Reflection.
Tendency: The distinctive will to any person, event or situation.
Illusion: Changes that occur during perception.
Affective Incongruity: The mismatch of responses to circumstances.
Affekt: Mood, temperament.
Asthenic: Weak.
Dementia: Dysfunction.
Echolalia and Echopraxia: Imitating others in speech or behavior.
Conversion: The bodily release of repressed emotion.
Regression: Primitiveization of thought and behavior.
Computation theory: the theory that deals with whether and how efficiently a problem can be solved using an algorithm

Context Awareness: the ability of a computer or application to reconfigure to fit the context in which it is being used (e.g. the location of the computer)

Cooperative Systems: computation systems that organize more than one machine into a collaborative device

Learning Systems: systems which use algorithms to evolve behavior

Logic: the systematic study of the processes of inference and reasoning

Machine Intelligence: the ability of a machine to mimic human thought and intelligence

Machine Learning: a branch of artificial intelligence that allows machines to evolve behaviors based on empirical data using algorithms

Natural Language Processing: NLP, a branch of artificial intelligence concerned with allowing machines to interact with human languages

Neural networks: a network or circuit of neurons, although this recently referred to only biological neurons, the term can now describe artificial neural networks

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"Bu çalışmanın başında amacım, "duygu okuyucular" olarak adlandırdığımız yapay zekâ ve algoritmaların geleceği üzerine farklı bakış açılarını gözler önüne sürmekti.

Hali hazırda var olan duygu okuyucuların, insan davranışlarının analizinde kullanılmaya başlanması ve bu konuda yaşanan gelişmeler ve konu hakkında kaynaklar benim için oldukça motive edici oldu.

Hali hazırda olan birçok duygu okuma ve tanımlama algoritması, henüz internet tabanlı yazıları, tıkları ya da kameralarla algılanan yüz, mimik ve jestleri kontrol ederek tartışmalı olarak bir kaçı hariç elindeki veri ile sınırlı değerleme aşamasında.

Duygu tanıma ve okumanın gelişimi mültidisiplin bir çalışmayı mecburi kılan bir alandır. Örnekle tıp doktorlarını, dilbilimcileri, psikologları, davranış bilimcileri, kriminologları, sosyologları vb. en az bilgisayar mühendisleri kadar konuya ve bir ekip çalışması üzerine çekmek gereklidir diye düşünmekteyim.

Bu nedenle farklı disiplinlerde bilim insanlarının hem ilgisini bu alana çekebilmek hem de duygu okuyucular hakkında insanlığın geleceği hakkında tartışabileceğimiz bir çalışma yapmak benim için çok daha fazla önemli oldu.

Bu çalışmada bu nedenle literatürde yer alan çalışmaları, sadece bu amaçlara hizmet etsinler ya da istenen mesajı iletebilsinler diye araçsallaştırarak sundum."

"At the beginning of this study, my aim was to present different perspectives on the future of artificial intelligence and algorithms, which we call "emotion readers".

The fact that the existing emotion readers are being used in the analysis of human behavior and the developments and resources on the subject have been very motivating for me.

Many existing emotion reading and identification algorithms are still in the evaluation phase, limited by the data at hand, arguably except for a few, by controlling internet-based texts, clicks or camera-detected faces, facial expressions, and gestures.

The development of emotion recognition and reading is a field that requires a multidisciplinary study. For example, medical doctors, linguists, psychologists, behavioral scientists, criminologists, sociologists, etc. I think that it is necessary to draw on the subject and a team work at least as much as computer engineers.

For this reason, it has become much more important for me to draw the attention of scientists from different disciplines to this field and to make a study about the future of humanity about emotion readers.

For this reason, in this study, I have presented the studies in the literature by instrumentalizing them so that they can only serve these purposes or convey the desired message."

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by
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Abstract

Throughout the history of a life, the man as an expreshionist, has discovered different ways to show and hide the emotions. The human acted as a hunter or a prey using methods embedded in his nature or the nature itself. Even though motherman, claim his modernity, he still continues living this ceremony. In this study; it is analyzed if nonverbal means of communication such as special face, mimic, gesture, body language, behavior; and both verbal and nonverbal means of communication such as lies and manipulation are comprehensible with the technologic devices, and the accuracy of these analyses was also invesgated. A hypothesis; From Security staff to order, from human resources to marketing, from management to education, from medicine to travel, from media to communication; it will be equipped with sentiment analysis algorithms.

Keywords: Nonverbal Communication, Emotional Recognition Technology, Machine Learning, Artificial Intelligence.

DUYGU OKUYUCU TEKNOLOJİ VE YAPAY ZEKÂDA SÖZSÜZ İLETİŞİM

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ÖZET

İnsan, dışavuran bir canlı olarak tarihi boyunca kendini ve duygularını göstermek ya da gizlemek için türlü yollar keşfetti. İnsan, gerek doğasında bulunan gerekse doğada gördüğü bu yolları avcılık seromonisi içinde bazen av bazen de avcı olacak şekilde biçimlendirdi. Günümüz insanı da her ne kadar modern olduğunu düşünse de hala bu seromoniyi yaşamakta ve devam ettirmektedir. Bu çalışmada; özellikle yüz, mimik, jest, beden dili, davranış gibi sözsüz; yalan, ikna ve manipülasyon gibi hem sözlü hem sözsüz unsurların, teknolojik cihazlar vasıtası ile anlaşılabilir olup, olmadığı; bu cihazların yaptığı analizin ne kadar doğru olabileceği ve geleceği tartışılmaktadır. Hipotez olarak gelecek; güvenlikten asayişe, insan kaynaklarından satış pazarlamaya, yönetimden eğitime, tıptan siyasete, medyadan iletişime kadar birçok mesleğin, giyilebilir duygusal okuyucular ile donanacak olacağı yönündedir.

Anahtar Kelimeler: Sözsüz İletişim, Duygu Okuma Teknolojileri, Makine Öğrenme, Yapay Zekâ.

Chapter 1

1.1. INTRODUCTION

"In my work, I will discuss some problems and suggestions that will reveal how we can produce artificial intelligence (AI) that can recognize and analyze human emotions holistically, how we can put this technology to the service of people, and the present, past and future place of the basic algorithms and hardware that can be produced for these AIs.

First, "The field of computer linguistics that analyzes opinions is called opinion mining or sentiment analysis (SA)."

I should start with a definition.

SA is part of the Natural Language Processing (NLP) field that deals with the analysis of opinions about products, services and even people.[1]

SA primarily focuses on views that express or imply positive or negative emotions. For example, Leilei et al. used Twitter data to predict election results. However, in this thesis, SA will not be limited to just the automatic classification of a text.

Because today, this technology is widely used in many fields from google to twitter, from commerce to politics, although it does not fully meet the needs yet.[2]

In my thesis, SA will be referred to together with the concept of emotion recognition (ET).

In the study, I will also share ideas on SA and ET, which will be discussed, and on the elements that can combine artificial intelligence, which can perceive human emotions in written, verbal and non-verbal ways, with wearable technologies, and summarize information on the literature. (Empathetic Algorithm)

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[1] Duygu Analizinde Farklı Vektör Temsil Yöntemleri ve Sınıfların Karşılaştırılması/Yüksek Lisans Tezi /Ayşegül ALBAYRAK

[2] Chen B., Leilei Z., Daniel K., Dongwon L., 2010. What is an opinion about? Exploring Political Standpoints Using Opinion Scoring Model. In Proceeedings of AAAI Conference on Artificial Intelligence.

By example "By combining accessories such as glasses and cameras in the simplest form used in the field of wearable technology with ER algorithms; It will also be possible to make it available to people who cannot read -prosopagnostic face -blindness-, to support law enforcement officers in understanding criminals or to use them in an interrogation, and even to help in the selection of personnel in human resources.

ERs can also measure the asymmetry of the patient's face or any other organ of the esthetician, enabling visually impaired and autistic individuals to understand the feelings of the people in front of them and to be involved in communication."

In short, it is possible to produce wearable devices with SR that can be used in almost every area where people are present in the very near future.

There are some obstacles, right or wrong, for this to happen. And if we overcome these obstacles in the right way, it is clear that a new social and psychological era will begin for human beings."

1.2. EMOTIONAL RECOGNITION TECHNOLOGY

The 21st century has been a highly productive era in the technological sense, in which many new concepts have emerged for humanity.

The contrasts of this age are that there are both advantages and disadvantages for people in the first place.

One of these innovations is AIs, which are emotion readers that can be used both for the benefit and for the detriment of human beings.

1.3. HISTORY OF EMOTIONAL RECOGNITION TECHNOLOGY

Man is a creature that expresses his emotions. Throughout history, we have wondered what the person in front of us thinks, how he feels, and the truth in what he says.

Philosophers in ancient Greece, thinkers in the Ottoman Empire and many civilizations tried to make human literacy both in their works and in their daily lives; Even if they look in different directions from facial analysis to body, from clothes to words, he has developed ways and

methods for the same purpose.

For example, in China, some attempts have been made to try to understand the truth by making people swallow dry rice by establishing a relationship with the salivary glands whether people are lying or not.

While scientific discoveries were increasing day by day, the research of the relationship between heart rate and blood pressure and lying went back to the end of the 19th century.

Later, with the addition of respiratory rate and galvanic skin resistance (sweating level) measurement to these parameters, today's "polygraph" or "lie machine" as it is known among the people has emerged.[3]

In the 1960s, features of artificial intelligence such as language processing, automatic problem solving and visual scene analysis began to be studied in American Universities. With the support of the US Department of Defense, artificial intelligence has advanced a lot.

In the 1970s, integrated robot systems, expert systems were the most developed parts of artificial intelligence. [4]

Contrary to the "Power Based Approach" approach with expert systems, the use of formalized knowledge and special processing techniques for problem solving has come to the fore (Knowledge Based Approach).

In the last 20 years, concrete progress has been made in this regard, and it has extended to AIs with today's informatics.

AI with machine learning was used for the first time in 2002 to classify movie reviews as positive and negative (Pang et al., 2002).

Instead of only a positive/negative binary classification, emotion classification according to more than one class such as angry, happy, unhappy and guilty (Balahur et al 2012) has been the subject of a referenced study.

Later, researchers from the Massachusetts Institute of Technology developed a device that could wirelessly detect whether people are happy, sad, or excited via radio signals.[5]

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[3] Ergen M., Ülman Y., Nörobilim, Nöroteknoloji, Yalan Tespiti ve Etik, Acıbadem Üniversitesi Sağlık Bilimleri Dergisi, Temmuz 2012
[4] Yapay Sinir Ağları ve Kredi Taleplerinin Değerlendirilmesi Üzerine Bir Uygulama Pakize Yiğit
[5] Detecting emotions with wireless signals Measuring your heartbeat and breath, CSAIL device can tell if you're excited, happy, angry, or sad. Adam Conner-Simons | Rachel Gordon | CSAIL Publication Date:September 20, 2016

This device, which can detect a person's emotions using wireless signals, which is the focus of researchers from MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL), has been named "EQ-Radio".

By measuring subtle changes in breathing and heart rhythms, EQ-Radio was 87 percent successful in detecting whether a person was excited, happy, angry or sad, and it could do so without body sensors.

Dina Katabi, MIT professor and project leader, envisions the system's use in entertainment, consumer behavior and healthcare;

"While movie studios and advertising agencies can test viewers' reactions in real time, smart homes can use information about your mood to adjust the heating or suggest you get some fresh air." He said.

"Our work shows that wireless signals can capture information about human behavior that is not always visible to the naked eye. We believe our results could pave the way for future technologies that can help monitor and diagnose conditions such as depression and anxiety. " He gave details in his work by saying;

For the experiments, subjects used videos or music to recall a series of memories, each evoking four emotions, as well as an emotion-free baseline.

Trained on just five sets of these two-minute videos, EQ-Radio was able to accurately classify a person's behavior 87 percent of the time among the four emotions.

Compared to Microsoft's vision-based "Emotion API" that focuses on facial expressions, EQ-Radio was found to be significantly more accurate at detecting joy, sadness, and anger.

Because a face's absence of emotion is often easier to detect than its presence, the two systems worked similarly with neutral emotions.

Carnegie Mellon University scientists are developing "emotional computers" that understand how people are feeling by reading the electrical signals emitted by brain cells.

The technology, tested at Carnegie Mellon University, uses self-learning software and a special MRI device.

A functional MRI machine (fMRI) scans neurons for emotional analysis of the human brain.

The new application developed by the San Diego-based company Emotient tells the mood by reading the face.

The application, which is not limited to Google Glass, will also be used in new devices that the company will produce for this application.

With the application on Google Glass, users will be able to view the emotional results from the facial expressions of the people they are in a relationship with.[6]

Many studies similar to these studies have shown us that the emotions and thoughts of humans and animals can be read in the future thanks to algorithms.

However, there are deep discussions and terminated projects on SR. Like Alexa Hagerty, for example, "Artificial intelligence doesn't understand people's emotions, it just draws mathematical conclusions from facial expressions."

There are those who talk about the failure of artificial intelligence in reading emotion, and the different discussions between the fact that many human rights organizations are uncomfortable with emotion recognition technology, and it also reveals that ethics should be formed on this issue.

Suggestions in this regard would be as follows;

First of all, the development of this technology will meet many different needs from health to safety, from media to communication and will provide great benefits to humanity.

However, analyzes without the consent of individuals will not be ethical.

Secondly, it will be time to develop these softwares and give the most accurate answers.

The trusted source will perhaps be associated with the blockchain chain.

In these cases, it is not possible to predict whether a situation will occur as in today's discussions, as the cameras cover all buildings and cities and the constant monitoring becomes normal.

How the relations of states with ethics will be is another matter of discussion.

Although we cannot be sure of the accuracy of the example, the BBC announced that China is testing a computer software that uses artificial intelligence and facial recognition applications to reveal

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[6] Emotional Computers Computer models of emotions and their meaning for emotion-psychological research by Gerd Ruebenstrunk

people's emotional states on Uyghur Turks in the Xinjiang Uyghur Autonomous Region.

"This is shocking material," said Sophie Richardson, China Director of Human Rights Watch (HRW).

These people aren't just reduced to a pie chart, these people are understandably nervous under extreme pressure, under a lot of pressure, and that's perceived as a sign of guilt, and I think that's a serious problem." she said.[7]

1.4. TODAY IN EMOTIONAL RECOGNITION TECHNOLOGY

A simple example of AI is Apple's Siri, a voice-activated smartphone app that is programmed to do a multitude of tasks. Ask Siri to do anything, from calling a friend to making dinner reservations, and Siri can do it. Siri seems almost human. When you ask, "Are you a real person?" Siri answers, "That is a really personal question."

Our devices are enabled to interact with us in a way that mimics a real conversation with another human being, like with Siri.

In its simplest form, some stores that want to compete with online shopping sites can offer instant campaign offers based on their personal purchasing preferences, thanks to a smart system that recognizes the faces of their customers.

This paved the way for a new concept of public relations and advertising.

Technology companies like Affectiva have been working on systems that not only recognize faces but also detect facial emotions for years. For example, big e-commerce sites like Amazon will be able to understand our emotional state during the purchasing process, namely, are we bored, confused or angry.

We can only imagine what this will change in the world of media,

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[7] Yapay Zekayla Duygu Tanıma Teknolojisi https://www.milliyet.com.tr/dunya/bbc-cin-yapay-zekayla-duygu-tanima-teknolojisini-uygurlar-uzerinde-denedi-6515216

advertising and marketing.

However, as can be understood from the studies in the literature, in sentiment analysis, statements in a dataset are generally classified and questioned whether they are positive or negative.

Maybe every ad we will see in the future will have very interesting fictions designed according to the current situation of the person, in other words, reading the mind of the consumer.[8]

The working principle of SR technology is based on several different sources. A technology that tries to verify using different sources, not through a single method.

One of them is a title that allows us to monitor the activities in our brain and analyze accordingly. So it's a physical device.

By measuring the sequences and rhythms formed in our brains, clues about our mood are sought. It is obvious that reactions such as heart rate, body temperature, blood pressure and sweating are also related to mood.

It is also on the agenda to include these situations in their measurements. It can also collect this data from the glasses, headphones, watch or clothing we wear. Facial expressions are very useful in understanding emotional state.

Technologies that analyze and understand our mood from the expressions on our faces are very popular lately.

In fact, the applications that analyze the emotional state with certain percentages from the uploaded human photo attracted a lot of attention.

Intel introduced 3D cameras with emotion detection system that can recognize the smile of the other person.[9]

The Kinect system used in Microsoft's Xbox One console can detect the heartbeat and facial expressions of the user within the "emotion platform" used.

There are different techniques for understanding emotions. The most common of these are those made with places called action units.

These aciton units define different muscles. For example, we have muscles that appear when we raise our eyebrows.

Those muscles are working in that action unit. There are other

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[8] Yüz Tanıyan, Duygu Algılayan Teknoloji/ Brandlifemag
[9] Teknoloji Duygularımızı Okuyabilir Mi? https://www.gazeteduvar.com.tr/teknoloji

action units on the cheeks.

There are many action units like this one. These units are clustered. For example, when the eyebrows go up, the cheeks go to the side and the cheekbones go up, this is known as a feeling of happiness. All of these have a clustering algorithm.

SA is tried to be done through this clustering algorithm. Another method used in sentiment analysis is machine learning, called the deep web.

Deep webs contain images of emotions such as happiness, anger, sadness, fear, and these images are labeled. With no human interaction, these images are fed into the deep web, and with machine learning, the deep web begins to learn about it.

These deep artificial networks can identify emotions by examining the correlation of images with emotions.

The transformation of ER technology into services may introduce us to many new commercial services.[10]

The ability to emotionally communicate with machines can also create some pretty fantastic solutions in the long run.

It is already known that giant technology companies (such as Apple, Facebook, Google, Microsoft) collect data about our moods by observing our behaviors and display content accordingly.

For instance, researchers have trained computer models to identify an individual's personality traits more accurately than their friends based exclusively on what Facebook posts they had liked. (Wu, Kosinski ve Stillwell 2015).

Companies that evaluate the music we listen to, the content we share, our search words and similar clues are doing marketing activities on this subject. Even our "likes" on social media give companies clues to understand our emotions.

A company called Kernel, founded by Bryan Johnson, a US entrepreneur, announced that it has developed a device that it claims can read minds.

The product, which is planned to be released in the near future, seems to increase the scientific world.

The mind-reading device developed by Kernel causes a few

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[10] "Facial Action Units" (Aksiyon Birimleri) İlke Demir TRT Röportaj

kilograms of weight when worn on the head.

The device, which is filled with sensors almost everywhere, monitors the blood circulation with the electrical impulses of the brain at the speed of thought.

The helmet, which first analyzes the information it collects and makes it meaningful, thus understands what a person is thinking.

The research called Neuro Cap, which was initiated with the support of the government within the Ningbo University, is leading this practice.[11]

Jin Jia, lecturer of Brain Science and Cognitive Psychology at Ningbo University, says that a highly emotional employee can endanger both himself and other employees at work, and this technology was developed to prevent such situations.

Jia said, "When the system receives a warning about an employee, the manager assigns that employee to another non-critical task or gives him a day off to rest.

Some things are too important to make mistakes." says. Jia, who said that initially employees were skeptical of this technology and thought that their minds were being read, states that everyone got used to the situation over time.

Although the ethical compatibility of the application is a matter of debate, the data obtained from here is such as to whet the appetite of a data analyst.

EEG scan data collected from thousands of employees every day can play an important role in the rapid development of mind reading technology. However, it is worth noting that the technology used at the moment is quite primitive.

Although important information can be obtained from EEG scans today, it is not very possible for an EEG device placed inside a helmet to make effective readings from outside the skull.

For now, the system can only detect sudden changes in the brain and realize that something is not right. It is not possible to understand exactly what the problem is with this method.

In China, workers' moods are tracked by their bosses through brainwave readers embedded in their heads.

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[11] Bir Girişimci, Zihin Okuma Cihazı Üretmeyi Başardı/Eray Kalelioğlu

A new application in China is pushing the limits in this field. At Hangzhou Zhongheng Electric company, EEG devices placed on the safety helmets of the workers try to determine the emotional state by reading the brain waves of the employees.

The company says the purpose of this practice is to detect sudden changes in mood and prevent workers from experiencing problems such as depression, anxiety or anger in the workplace.

It is stated that this application, which is the product of a state-supported project, is not limited to a single company, but is also used by many private companies and government institutions in China. Zhejiang Electric Power company also announced that it has been using this technology since 2014, thus making a profit of 2 billion Yuan (1.3 billion lira).

"There is no doubt that the program is effective," says Cheng Jingzhou, director of the company's emotional tracking program. It is stated that over 40 thousand employees in the company are followed by this system.

The electrode computer developed by the Austrian technology company Guger Technologies has become a hope for the paralyzed patients who cannot speak or move.[12]

With this computer, patients will be able to tell their problems by projecting what is in their minds to the screen with a cable. For the method, which was showcased at the technology fair in Düsseldorf, Germany, as "Brain-Computer Interface", the user is first trained.

Patients who receive training on concentrating on emotion patterns, for example, focus on this thought when they want to ask the other person's well-being.

The currents coming from the electrodes attached to the helmet on his head are transferred to the computer where the signals previously received in these emotion patterns are loaded.[13]

Researchers from the University of Cambridge developed an artificial intelligence algorithm in 2017 that can measure how much pain the sheep are in by reading their facial expressions.

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[12] South China Morning Post

[13] Brain-Computer Interface & Neurotechnology Research Product Catalog for Current & Future BCI Applications. 2018 g.tec medical engineering GmbH | Schiedlberg | Austria Florian Voggeneder, Miriam Primik, Tom Mesic, F. Feinkorn, Tomer Foltyn, Nicolas Brodard

Initial tests showed that the system could predict the level of pain with 80 percent accuracy. The accuracy of the predictions is quite high.

Like the upcoming app from Cambridge-based ei Technologies. ("ei" means "emotionally intelligent" in English.) The company is developing an application that can identify people's moods in calls made over smartphones, through the acoustics of the conversation rather than the content of the conversation.

Massachusetts Institute of Technology (MIT) has developed a neural network method that can detect depression in clinical interviews with people. The system tracked depression in voice and written responses.

Artificial intelligence predicted whether people were depressed by reading hidden clues in the language they used.

According to the results of the research, the system predicted with 77 percent accuracy whether the person was depressed after seven written and thirty voice answers.

Jessica Rahman, a researcher at the Australian National University School of Computing, has been conducting a project on how music affects emotions since 2019.

Jessica Rahman first makes patients listen to a certain song. As they listen to the song, advanced sensors record their physiological responses in pulse, skin temperature, sweat glands and brain waves.

Jessica Rahman then transfers this data to the artificial intelligence system she has developed.

AI can automatically learn patterns, relationships between the type of music and emotional and physiological responses, and then predict participants' emotions almost better than they can.

With 96 percent accuracy, artificial intelligence can accurately know which type of music is being listened to and how it affects the participants.

The artificial intelligence algorithm stores the habits of each individual user (the pages he likes, the content he interacts with, the profile he visits, the pages he visits, and the websites he visits outside of these platforms) and creates a user profile for each individual through this data. Thanks to this profile, the artificial intelligence algorithm knows what you like and therefore what you would like to see in the future, and offers you relevant content in this context as a priority. This

also reveals a personal understanding of media.

A computer, whether detecting a criminal or autonomizing a voting process; The ability to recognize by interpreting is one of the important issues that concern artificial intelligence researchers. (Nabiyev, 2016, p. 501)

1.5. FUTURE OF EMOTIONAL RECOGNITION TECHNOLOGY

Algorithms, which first started with facial analyzes of who the interlocutor is, may be able to understand our physical ailments with advances in health, while evolving into emotional analysis (Sentiment Analysis).

Medium-term emotion readers can help individuals who suffer from loneliness in modern society and can make some interventions to improve their mood without resorting to it.

Emotional readers may soon begin to support the elderly and sick in caring services, and algorithms that understand both our emotional state and physical ailments can identify the stress experienced in modern society.

It can be used in defense and cyber security, intelligence fields.

It can also be used to disseminate or weigh information.

In the coming years, voice bots in all kinds of dialogic interfaces such as IVRs and general-use voice assistants will be more in life.

Voice-based virtual assistants will not only target customers, but will also play an important role in converting potential customers into customers.

Algorithms that read our little behaviors before we go into a depressive mode can also do things that will make us feel happy by changing our mood before we feel completely bad.

For example, as soon as he realizes that we are sad, he can play a happy song and show a funny video, helping us to finish what we are having trouble doing. It can make it easier for a teacher to understand his students, a doctor to understand his patient, a parent to understand his baby.

Emotion readers can contribute to us in a wide range of ways, from robots to understanding and imitating us, from the tools we use to giving

feedback according to our mood, from smart homes to smart vehicles.

Therefore such sentiment analyses models are are quirement for shaping the society into a happening place.

A new language may develop that will radically change communication.

It would be beneficial if the machines are able to understand human emotions, enabling communication to take another step forward.

This technology can also cause mechanized social relations and dissatisfied individuals as a result of all these substances.

It is also a disadvantage of the issue that the privacy of people is determined to be in the background. More precisely, it can reduce communication and emotional attachment by making it an addiction like cell phones.

With the digitization of the art gallery, a new artistic environment can be created in media and communication.

SR's can also be used especially in distance education and the course motivation of the participants can be followed.

As in the example of Microsoft, many software, by nature, can reach a conclusion by applying the face-mimic data in their hands to a photo that is uploaded or taken. The next breakthrough is the reality of the act of surprise.
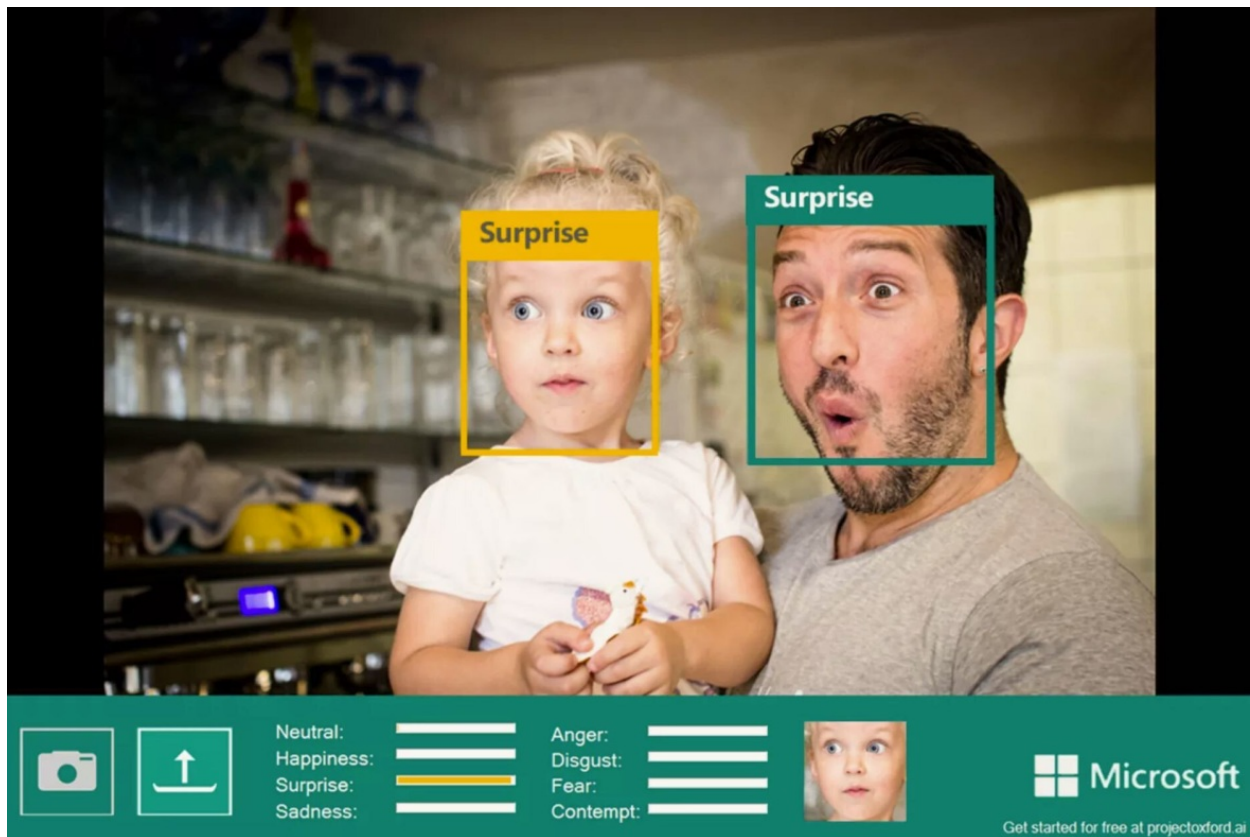
Figure 1 Microsoft Face-Mimic Emotion Reading Technology [14]

However; Microsoft has terminated its facial recognition project, which can detect emotions provoked by non-governmental organizations.

IBM abandoned the facial recognition technology project due to similar problems. Stating that the project he developed may violate human rights while being used, IBM decided to stop the project.

Artificial intelligence-assisted facial recognition technologies, which are seen as the technology of the future, are terminated by companies due to human rights concerns.

Another discussion topic is not the future of artificial intelligence, but the future of us humans with artificial intelligence, or we humans in the world of artificial intelligence.

According to a study by Oxford University, 50% of jobs in America will disappear in 15-20 years with the development of artificial intelligence. Patients will describe their symptoms to the artificial

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[14] https://time.news/microsoft-stops-selling-emotion-reading-technology/

intelligence on the other end of the phone, using their cameras to show the places the artificial intelligence wants to see.

Director of the University of Cambridge Center for Existential Risk Research (CSER), Dr. Seán Ó hÉigeartaigh states that artificial intelligence occupies a large place on the CSER agenda: "This is partly because there has been so much progress in recent years that a number of lower bounds have been crossed, indicating that research has had a tremendous impact and is advancing very quickly."

On the other hand, he also underlines the point that they are aware of, saying, "Focusing only on catastrophic risk has limited us in terms of the scope of this field, considering that there is much to be addressed in artificial intelligence."

The center is envisioned as a center that will host experts from similar disciplines dealing with artificial intelligence and will examine not only its long-term but also its short and medium-term impacts, taking into account not only risks but also opportunities and challenges.

It takes expertise in the political, economic, legal, sociological, and even philosophical field to think about these long-term, picture-perfect questions.

An artificial intelligence that learns emotions; can also learn to manage and manipulate emotions. In order to get away from these negative effects and to create the infrastructure for positive effects, there will definitely be information that needs to be taught to artificial intelligence and information that needs to be given to us as users.

In this regard, while the future of learning artificial neural network methods is discussed, there are also discussions on whether we humans can have these neural networks in terms of health. See. Artificial neural networks Learned, quasi-linguistic neural representations (QNRs) that amplify words into embeddings and syntax graphs can provide a semantic environment that is both more meaningful and computationally more traceable than natural language, an environment that can support formal and informal reasoning, human, and interagent.

The incremental development of QNR-based models can build on existing capabilities and methodologies in neural machine learning, and as systems mature, potentially complement or replace today's opaque "base models" with more capable, interpretable, and epistemically reliable systems.

There is a need for suggestions on how to manage the rapid progress of this process by examining the change process from the past to the future.

If you were to ask what is the future place of SRs, we can say that the answer is certain. However, the most important problem is the problem associated with learning real-time human communication and interaction.

For this reason, the data that should be provided by algorithms and that can be a source of artificial intelligence for its development, such as a baby's learning, should come from versatile holistic communication models and strategies.

If we gather the communication in 3 groups, such as verbal communication, nonverbal communication and written communication, in accordance with the subject, the strategy of today's algorithm manufacturers is naturally to focus more on written communication.

Coupled with text-based natural language processing tools, biometrics will allow computers to unlock a previously unattainable level of human-computer interactions (HCI), learning from and engaging humans with nonverbal communications that will create a more meaningful conversation

Because human communication is a very complex structure.

It can act with human facial expressions, and it is not a creature that communicates only by speaking and expresses its emotions.

In some studies, he can hide his emotions more when talking.

For this reason, it can be ensured that artificial intelligence can learn by conditioning communication and interaction.

One of the important issues is that artificial intelligence makes sense of conditioning, as in living things. (Reinforcement learning - reinforcement learning)

Behavioral learning, which is a title in psychology, is divided into three;

Observational learning, classical conditioning and operant conditioning.

We are talking about an artificial intelligence experience similar to these learnings.

The tool includes two components: a policy and a learning algorithm.

A policy is a mapping that selects actions based on observations from the environment. Typically, the policy is a function estimator with adjustable parameters, such as a deep neural network.

The learning algorithm constantly updates policy parameters based on actions, observations, and reward. The purpose of the learning algorithm is to find an optimal policy that maximizes the cumulative reward received during the task.

In other words, reinforcement learning involves a tool that learns optimal behavior through repeated trial-and-error interactions with the environment without human intervention.

And coming soon to a computer near you:

Artificial Intelligence and Quantum Computers

Note: Quantum computing is a new kind of computing, using the same physical rules that atoms follow in order to manipulate information. Generative models are those models that don't just limit themselves to answering a question, but that actually generate output such as an image, music, video, etc. As an example, imagine you have a lot of pictures of the side of a face, but not a lot of pictures of the front of a face. If you want security detection capabilities to be able to recognize dual facial recognition on the front side of a face, you can actually use these generative models very accurately to create more samples of frontal views of a face.

1.6. AI AND THE FUTURE OF HUMAN

Has the time come when computers and AI have caught up to human beings? Have they now, or will they soon, be "entirely sentient beings?" Although computers have the ability to make our life better, are they really double-edged swords that may eventually control and destroy human beings?

AI will be deployed to augment both defensive and offensive cyber operations. Additionally, new means of cyber attack will be invented to take advantage of the particular weaknesses of AI technology. Finally, the importance of data will be amplified by AI's appetite for large amounts of training data, redefining how we must think about data protection. Prudent governance at the global level will be essential to ensure that this era-defining technology will bring about broadly shared

safety and prosperity.

AI becomes more powerful, so does its scope for affecting our economy, politics, and culture. This has the potential to be either extremely good, or extremely bad. On the one hand, AI could help us make advances in science and technology that allow us to tackle the world's most important problems.

But while commonly thought of as a threat to privacy, AI also has the potential to help preserve privacy and exert control over proprietary data and its derived assets.[15]

1.7. MACHINE LEARNING

Machine Learning is a method which helps us to study about algorithms and models that a computer system can use to perform some specific task without external instructions.
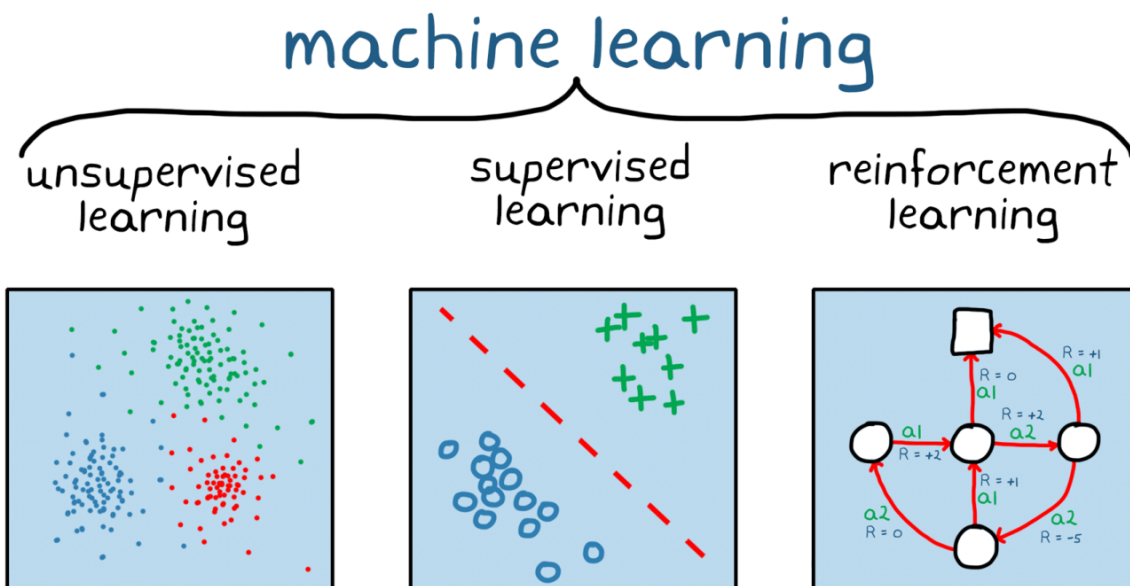

Figure 2: Machine Learning Dipict - Mathworks

Machines do not feel any emotion, they do not have empathy with

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[15] Brundage, Miles, Shahar Avin, Jack Clark, Helen Toner, Peter Eckersley, Ben Garfinkel, Allan Dafoe, Paul Scharre, Thomas Zeitzoff, Bobby Filar, Hyrum Anderson, Heather Roff, Gregory C. Allen, Jacob Steinhardt, Carrick Flynn, Seán hÉigeartaigh , Simon Beard , Haydn Belfield , Sebastian Farquhar , Clare Lyle , Rebecca Crootof , Owain Evans , Michael Page , Joanna Bryson , Roman Yampolskiy ve Dario Amodei . 2018. Yapay Zekanın Kötü Amaçlı Kullanımı: Tahmin, Önleme ve Azaltma .https://arxiv.org/ftp/arxiv/papers/1802/1802.07228.pdf .

humans, they can not recognize the emotions that a person is feeling compared to their own, as humans do.

The information available are large matrices that represent the images captured and other additional information the might have like sensors or microphone. It is from there where we have to start working.

For this reason, the recognition of emotions by computer is so complicated. To achieve this, we must first discover what emotions the human being really feels, what technology is the most appropriate to capture them, and which models and algorithms are the most effective.

1.8. EMOTIONAL RECOGNITION AND MEDIA

Media & technology are intererlated and one cannot survive without the other. The information and knowledge which media wants to generate among the masses is communicated only through various forms of technology.

It is only because of media that the uses of technology could be understood. In mass communication, media are the means of communication used to store and transmit information or data.

Therefore, when we talk about how societies engage with technology we must take media into account, and vice versa.

Media has sub-titles such as advertising media, broadcast media, digital media, electronic media, print media, news media, print media, social media, new media, and multimedia.

According to McLuhan (2002), with the integration of computer systems with media (computarized medias), media offers sensory abilities at different rates, enabling individuals to experience many experiences that they cannot see, hear and go through their digital extensions.

Today's sentiment readers are evolving at a level where they can control and analyze the news, the source of the news, or rather the information, the dissemination of information.

Although the definition of new media varies from person to person, the possibility of emotional readers creating a brand new media is

increasing day by day.

The words that cannot escape the control of artificial intelligence are not known to what extent they become binding with the political determinants and authorities, but the future is pregnant for us to build a bridge between our concerns and our wills.

In addition, the fact that the media has started to integrate with the internet of things and big data systems and the correct definition of what ethical media is will provide a correct understanding of its future effects.

Moreover social scientists take the idea of the surveillance society so seriously that there is an entire journal devoted to its study, Surveillance and Society.

The panoptic surveillance envisioned by Jeremy Bentham and later analyzed by Michel Foucault (1975) is increasingly realized in the form of technology used to monitor our every move.[16]

Chapter 2

The rest of this section outlines the most important aspects of nonverbal communication from both psychological and technological points of view.

2.1. EMOTIONS

Although difficulties are encountered in defining emotions conceptually, there is a need to define emotions scientifically.

Emotion can be expressed as a process with identifiable periods, which includes subjective experiences related to the individual, what the individual can do in relation to events that are important to the individual, and the evaluation of the context.

Primary emotions are innate emotions that are experienced for short periods of time and appear rapidly, usually as a reaction to an outside stimulus, and are experienced similarly across cultures.

The primary emotions are joy, distress, anger, fear, surprise, and disgust.

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[16] Kerr, Elizabeth. (2014, February 07). Cyberfeminism and postmodern technological discourse. 24th Annual Thinking Gender Conference, UCLA Center for the Study of Women. Retrieved April 18, 2014, from https://www.youtube.com/watch?v=CGzW8Q7Fui4.

Secondary emotions are not as innate as primary emotions, and they do not have a corresponding facial expression that makes them universally recognizable.

Secondary emotions are processed by a different part of the brain that requires higher order thinking; therefore, they are not reflexive. Secondary emotions are love, guilt, shame, embarrassment, pride, envy, and jealousy (Evans, 2001).

These emotions develop over time, take longer to fade away, and are interpersonal because they are most often experienced in relation to real or imagined others.[17]

2.2. EMOTIONS, COMMUNICATION AND INTERACTION

Emotions are physiological, behavioral, and/or communicative reactions to stimuli that are cognitively processed and experienced as emotional (Planlap, Fitness, & Fehr, 2006).

Lisa Feldman Barrett, a psychology professor at Northeastern University, expresses a theory she created according to the latest neuroscientific research as follows: "Emotions cannot be defined as universal (joy, sadness, anger, etc.) as shown in emojis, according to person, society, culture and age. will change," he says.

This change is important for artificial intelligence to have an infrastructure that can recognize the variables.

"In this context, it's very important to recognize the subtleties of emotion," says Barrett.

"For example, in an emotion expressed as awesome, is it happiness, satisfaction, excitement, relaxation, joy, hope, inspiration, pride, joy, gratitude? Is it anger, anger, panic, grudge, regret, sadness, shame, uneasiness, resentment, fear, jealousy, grief, melancholy?

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[17] Evans, D., Emotion: The Science of Sentiment (New York: Oxford University Press, 2001).

According to Barrett, it is very important to detail these feelings as much as possible within yourself." (Lisa Feldman Barrett)

Another controversy takes place here. How can a person teach this situation to artificial intelligence when he cannot perceive his own feelings and thoughts yet?

And what happens when the second and third individuals enter this equation?

The important difference between communication and interaction is that interaction is a broader term whereas communication is part of interaction. Interaction does not always have to be through language; It can even be with movements.

For this reason, it is both difficult and important for emotion readers to focus on communication and interaction.

Wilbur Schramm made an effective determination as "Every branch related to human society and behaviors must deal with communication" and that communication skills are not only important for people; He tried to express that it is important for businesses that aim to reach their goals by making use of other branches of science and human efforts as much as people.

Communication is an organism's differential response to a stimulus. (Translated by Trenholm, 2008) "The Signal"

It is the process of exchanging messages between individuals, groups and species wherever there are humans. (Cemalcilar, 1988: 305). "Transfer"

It is a process in which the meanings including feelings, thoughts, ideas, knowledge and culture are transferred with the help of symbols. (Amount, 2003: 34). "Symbolic Transfer"

There are aspects that belong to this process and that hinder this process.

2.3. COMMUNICATION

We are lucky as humans to have a whole host of communication types available for us at our fingertips.

Five Types of Communication:
- Verbal Communication.

Verbal communication occurs when we engage in speaking with others.

- Non-Verbal Communication.

What we do while we speak often says more than the actual words.

- Written Communication.
- Listening.
- Visual Communication.

Intonation – Intonation defines how the pitch of your voice increases and falls during a speech. A shift or variation in pitch can have an impact on the meaning of what we say.

Stress – Stressing is the process of emphasizing a word or statement in order to bring attention to it.

Stress syllables and words are said louder, for a longer period of time, and with a higher pitch. When the speaker is monotone, these crucial cues are missing, and the message becomes puzzling.

Pauses – The pause allows the speaker to gather his or her thoughts before making the final argument.

This allows the audience to stay up with you while also giving them time to process what you just stated.

Focus Stress – The listener's attention is drawn to a certain word or phrase when there is focus tension. The employment of focus stress is used to clarify, emphasize, or demonstrate the difference.

Pace – Pace is the rate at which you speak. The pace might be rapid, slow, or moderate, and it can fluctuate throughout.

It is claimed to vary the tempo, quickening up at times and then slowing down depending on the scenario and the significance of the context, in order to keep the audience's attention.

2.4. METHODS OF COMMUNICATION

What are we saying?	"Content"
Where do we say?	"Place, location"
When, How soon do we say?	"Time"
Why do we say?	"Purpose"
How do we say it?	"Style"

To whom do we tell?	"Interlocutor"

Table 1. Methods

We cannot say that an algorithm that can combine these five different aspects with existing data thinks like a human being, but we can say that it understands us. But algorithms can achieve this with human assistance.

As soon as they achieve this, the task of removing noise in communication will not arise.

All factors that hinder communication are defined as noise. Noise in communication arises as a result of factors affecting the flow of communication and causing disruption to this flow.

It is the sender not included in the communication channel. Noise creates negativities that affect the message in the process of receiving the message. For a communication it is a loss, a defeat, a failure.

This can also be done to hide the truth when the situation seen as "failure, loss or defeat" is taken from another perspective.

It is obvious that artificial intelligence needs quite a lot of learning just to distinguish this difference. This is why the concepts of making noise and clearing noise exist in intelligence.

The most important benefit of recognizing the basic profile of human beings is not only to evaluate the people around them correctly.

Being aware of these characteristics makes very fundamental changes in one's own life. People often think that they are behaving as they please.

However, recent research has revealed that "People feel the way they act rather than acting the way they feel."

A bored person has a frown, sullen face, low shoulders and a closed center. We all experience boredom from time to time for no reason. However, we do not think that we are bored because we frown, frown, and drop our shoulders and close our centre.

Whatever behavior a person excludes, after a while, he begins to experience feelings in that direction due to the changes in his body chemistry. Pretending to be a distressed person only increases his inner distress.

The first interaction between two people facing each other is an important determinant of the communication process.

The factors that create this effect, everything from the body language of the person to the words he uses, from all the accessories that the person carries to the physical environment objects he is in, are of great importance.[18]

The combination of all these factors finds a place in the values of the "perceiving person" and is interpreted within that framework.

The perceiving personal characteristics and social norms and stereotypical judgments make a "decision" in the first moment of communication depending on the interaction data, and the person sticks a label in his mind. This decision can be positive or negative.

However, these decisions may not always be so clear and conscious. Whether the person raises them to the level of consciousness or not, it is known that the judgment formed by our first perceptions plays an important role in your communication style and the value we attribute to that person.

The messages we give with our body language is the most basic tool in communicating with people.

We use our primary body language both in our close environment, in our wider social life, and in our relationships with people from different countries, and we try to decipher what they say with their body language.[19]

We try to make our close friends, spouse, children feel what we think with our stance or look. For the most part, they also receive these messages and understand our thoughts and feelings.

The more common features in our culture with the people we communicate with, the easier it is for us to understand each other's body language.

For this reason, body language is used intensively in the family, which is the narrowest environment in which the person lives.

Our gestures and mimics, which mean "understand what I feel, what I say!" have an important place in terms of frequency of use in terms of our communication with our close friends, lover, spouse, and especially with our children.

Man waits for agreement with his tongue first. This becomes more evident when we do not get what we want and we do not want to

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[18] A version of this article first appeared on Harvard Business Review/Emy Admonson
[19] Jackson ve Bekerian, 1997, s.5

talk about a negative emotion.

We expect to be understood what it means to be looked into our eyes, and what we want to do, especially in our communication with people we are in close contact with.

The meanings deduced from such small signs are of great importance in determining the positive or negative development of the relationship.

In Tibet, "hello" is given with the tongue out. Elsewhere, raising one eyebrow can mean saying hello. Raising your index finger in one place is an insult, while in another it may appear as a religious element.

Therefore, the algorithm also needs to understand people from different traditions.

As you enter different cultural groups, it becomes difficult to evaluate the details of nonverbal communication messages.

Significant knowledge is needed to understand the silent languages of groups. For this, it is necessary to know the culture, relationships, communication and view of the world of those people.

Culture is a way of solving the problems and difficulties of man with nature and man throughout history.

As cultural differences increase in our body language relations, it may become very difficult for us to evaluate the flow of emotions and thoughts of the people around us in a foreign country.

Primary Signs in Communication;

They are the signals in the body of the experiences of pleasure and pain arising from the most basic needs of the organism and the emotions that arise due to these experiences.

Secondary Signals in Communication;

Over time, cultural differences have been reflected in people's body language, and there have been differences in body language.

In addition to the differences in verbal symbols according to cultures, there are also differences in their expressions with body language.

People unconsciously learn signs and use body language accordingly.

If we examine the communication messages in a little more detail,

we will see how difficult it is for a person to break away from his own culture.

In communication, within the meaning that the sender attributes to the message, there is the way his/her own culture perceives the world and the individual integrity of that person.

A person's individual needs, namely the use of body language, is in interaction with the values of the family and society in which he lives.

Suspicious:

Well! Maybe today will be good.

Playful:

Yes, the weather is fine, but for the ducks.

Dispute:

You mean the weather is nice? You are very optimistic indeed.

Mad:

The weather is fine but we are closed within four walls.

Kindliness:

The weather is nice. Let's go out, my boy. If you breathe air, you will get better.

Angry:

Shame on you. Here you are!

It is difficult to understand emotions based on direct words without noticing an element such as implication.

The harmony between the emotional meaning or content of the word and the behaviors is also a very important element of persuasiveness.

We have always heard expressions such as the eyes are the mirror of the soul, the eyes do not lie, the man's face is selling vinegar, I can see what it costs, and I am sure we have used it ourselves a lot.

Israeli researchers from Tel Aviv University (TAU) have developed a new artificial intelligence technology that will reveal lies from the

movements of facial muscles.

In the study published in the peer-reviewed journal Brain and Behavior, TAU researchers identified two different groups of liars: those that activate their jaw muscles while lying and those that activate their eyebrows.

The research was carried out with soft-surface adhesive labels developed by TAU, which contain electrodes that monitor and measure the movements of muscles and nerves.

Body language helps us to express ourselves, to understand the other person, to observe our own inner world, to learn about the inner worlds, psychological states and mental states of the people we communicate with, to learn many more mysterious and hidden things, and to interpret what we have learned.

Discovering is an adventure, and body language helps to discover and solve a person.

When we meet a male or female friend, when we go to a job interview, when we go to testify in court, when we go to a place we have never met or to ask for a girl, when we talk to people we meet for the first time in our daily life or have known for years, at any party, seminar, meeting, our body language The message is very important.

We humans sometimes try to hide our feelings and thoughts, our beliefs and principles, and our psychological state, but; Our body language cannot hide them, and our body language gives the real message.

Profile studies have revealed an analysis method that enables to obtain important information about people, by examining the whole process from the beginning of the communication - before people even start talking - to the end.   Elements of individuals such as face, mimic, gesture, voice, smell, clothes, tattoos, accessories; While data mining is carried out on people in this field, where techniques used to understand the individual/individuals according to their needs are brought together in the light of science by combining their body languages and anatomical features with their behavioral outputs; Poon Teng Fatt defines nonverbal communication in terms of two dimensions: behavioral/interpersonal communication and environmental.

Interpersonal communication; body posture, posture distance, hand/arm/head movement, while it includes subjects such as facial

expressions, eye contact, tone of voice and the direction of the individual's posture compared to others; On the other hand, environmental communication is about the meanings that a person derives from his environment.[20]

Researchers especially draw attention to environmental communication and underline that artificial elements such as perfume, dressing style, use of jewelry-jewelry, lighting, furniture, fragrance, music reflecting the natural environment are at least as important as other elements (Poon Teng Fatt, 1998:16).

Researchers have defined emotion as "The body's multidimensional response to any event that enhances or inhibits one's goals."

2.5. STRESS AND COMMUNICATION

Stress is a feeling of emotional or physical tension. It can come from any event or thought that makes you feel frustrated, angry, or nervous.

Another way that stress manifests is through communication.

Communication stress can easily manifest itself through communication. When someone is stressed, they may become frustrated or angry more easily. When emotions run high, a person can have a difficult time choosing the correct words or tone.

Alternatively, when a person feels stressed, they might decide to withdraw from communication and become more reclusive. This withdrawal from friends and family can create a barrier between the person and the help and support they might need.

People who are feeling stressed out may become easily frustrated or angry. This can have a negative effect on your communication skills. A person in a heightened sense of emotion can have trouble choosing their words carefully or expressing things in an appropriate way.

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[20] İletişim Tarzinin Ve Sözsüz İletişimin Çalişanlarin İş Performansina Etkisi: Posta Dağiticilari Ve Hemşireler Üzerine Bir Araştirma Meltem Onay* Zeynep Hale Süslü** Sevde KILCI*

Chapter 3

3.1. CONTACT

Oral communication is called spoken language. Oral communication; face-to-face meetings, speeches in meetings, oral briefings, oral presentations, official speeches are established in various ways (Tutar, 2003, p.21-23).

When we communicate with the person in our mix; We say what we want to say not only with the words we choose to send to the other person, but also with our eyes, facial expressions, body movements, tone of voice, and emphasis in our message (Alkan, 2016, p.28).

Human communication is distinctly bi-directional; as you're communicating verbal and nonverbal information, the person you're chatting with is not only processing your signals, but putting out their own.

However, screens don't have bodies, so by extension, they don't have body language, and as such, they are incapable of nuanced nonverbal communication.

3.2. NONVERBAL COMMUNICATION

Communication is not just talking. It's everything from the hairstyle to the way we dress.

Nonverbal communication is important because it gives us valuable information about a situation, such as how a person is feeling, how someone is getting information, and how to approach a person or group of people.

Developing an analysis by paying attention to nonverbal communication would be more appropriate than reading writing and verbal emotion.

Body language (kinesics), proximity and use of space (proxemics), touch (haptic), environmental factors (architectural style, smell, color, temperature, lighting, noise and traces of previous movement), physical characteristics (general attractiveness, body or breathing) odor, length, weight, and hair-skin colour), translingual (non-speech sound signs,

loudness, speech rhythm, intensity, silent pauses, voices interfering with speech, speech disorders), artifacts (perfume, dress, lipstick, glasses, tattoo) are all included (Knapp, 1978).

3.2.1. Body Language (Kinesics) in Nonverbal Communication

Man has needed a language in order to communicate with his social environment.

This language is not only the language formed by the phonetic string (vocal cords, tongue, teeth, etc.) in verbal communication, but also the language used by human beings during the communication established at the beginning of human history, before the evolution they lived in (Perçin Akgül, 2014, p: 34).

Human body language is divided into two categories: structural information (such as facial features, body structure) and kinetic information (facial expressions, facial expressions, body movements or posture).

Body Language (for example, a change in gait or posture) may reflect related action actions that are closely related to the emotional state. (Montoare, Goldstein and Clausen, 1987; de Meijer, 1989; Wallbott, 1998; Hadjikhani and de Gelder, 2003)

A person's posture and gait also provide information about the person. For example, it gives information about the mood of the person, how he perceives himself and the status of the person (Geçikli, 2008, p:311-313).

Betty Grayson and Morris Stein did an interesting psychological study trying to understand how criminals set targets.

They shot video of people walking on the streets in New York and showed it to 53 criminals who were in a large prison for violent crimes such as extortion and murder.

The results of Grayson and Stein's research were interesting. In the system, which rated the people in the video on a scale of 1 to 10 on how 'easy prey' they were, criminals often rated walking videos of the same people higher.

Of course, there was a predicted trend: women in general were described as 'easy prey' more often than men and the elderly more often

than younger ones. But still, even in subgroups where we might think the least victimization, for example, among young men, some individuals were cited as more likely to be attacked frequently. (Grayson and Stein)

Another study published in the journal "Social Psychological and Personality Science" shared the conclusion that extroverts walk faster than their introverted friends.

An international team of researchers in the US and France noted that people who walk fast scored higher on extraversion, conscientiousness and openness, and lower on neuroticism.

Conscientiousness and extroversion had a more positive effect than openness, but agreeableness did not seem to have any effect on gait. Higher levels of extraversion were linked to walking an average of 0.06 meters per second faster than those who scored higher in introversion.

"This study provides strong evidence that walking speed in adulthood partially reflects an individual's personality," the researchers wrote in their paper.

Previous research has found that walking can affect a stranger's perceptions of a walker's personality.

For example, a 2012 study found that a gait cycle that represents a completed step with each foot is needed for a group of students to perceive the walker personality.

Loose gaits were associated with extroversion and adventurousness, while shorter gaits were perceived as more neurotic. However, motion-based feature impressions were reliable but not valid; the impressions did not match with how the marchers evaluated themselves.

Personality not only affected walking speed, but also how gait changed over time.

Those who scored lower in neuroticism and higher in extraversion, conscientiousness, and openness experienced a slower decline in walking speed compared to their peers.

These findings coincide with earlier research suggesting that those with higher neuroticism and lower conscientiousness had less physical activity and more sedentary behaviors.

There is a correlation between gait and personality, but warrants further research to explain why.

It is unclear whether this is based on personality and behavior or if there is a biological or neurological component.

Or maybe it's related to the "modelling" we mirror the way our parents walk.

"If you go out with your family, parents say, 'Come on, keep going' or 'Look at this' or 'Don't rush,' or encourage or discourage a form of walking.

It affects your pace in life," said Patti Wood, author of Snap: Making the Most of First Impressions, "The Huffington Post Canada" reports.[21]

In the current study, the researchers collected data from more than 15,000 adults ages 25 to 100 to see if personality traits were linked to gait style.

Participants' personalities were assessed via questionnaire and graded according to the Big Five personality traits, which include extroversion, conscientiousness, openness, agreeableness, and neuroticism.

Gait speed was assessed using the participants' normal gait. The pictures drawn on the cave wall, the smoke produced by the Indians by burning fire, the full voices of the African natives are the primitive methods used by primitive people to meet their communication needs (Yüksel, 1994: 9).

A study conducted at the Canadian Institute of Advanced Studies (CIFAR) revealed that people's moods are reflected in their walking, and the way they walk also affects their mood.

It was reported that the result of the study may contribute to the development of new curative approaches in the treatment of patients with depression.

CIFAR senior researcher Nikolaus Troje explains the purpose of the research: "It's not surprising that our mood or how we feel affects the way we walk. "We wanted to see if the way we move our body also has an impact on our mood."

The researchers asked the participants to walk on the treadmill, to which they were shown a list of positive and negative connotations such as "nice," "scared," and "angry," to determine their gait and body posture.

[21] Stephan Y, Sutin AR, Bovier-Lapierre G et al. Personality and Walking Speed Across Adulthood: Prospective Evidence From Five Samples. Social Psychological and Personality Science. 2017.

During the study, the researchers showed participants a pointer that moved left and right on the screen depending on whether their gait was "depressed" or "happy", and then asked some of the participants, unaware of what the needle was moving, to try to move the needle to the left rather than to the right.

The researchers, who quickly realized what they needed to do to move the needle to the right or left, then asked the participants to write down the positive and negative words they remembered from the list shown to them at the beginning of the study.

At the end of the study, it was determined that the participants who imitated the walking style of depressed people remembered more negative words, while the other group remembered more positive words.

The researchers emphasized that this result revealed that the depressed gait pattern created a more distressed mood.

Troje stated that the research is based on previously obtained information on the effect of mood on people's memory.

Noting that it is known that people who have had severe depression that required hospital treatment, remember more negative moments than positive ones, especially in the events related to them, Troje said that remembering bad moments causes these people to feel even worse.

In a study published in the journal Social Psychological and Personality Science, researchers show that your walking speed and body language can reflect your mood and personality.

Scientists working at Monpellier University in France and Florida State University in the United States found that extroverts walk faster than introverts. As people walked faster, their characteristics such as extroversion and expressing their ideas clearly increased, while their neuroticism decreased.

Walking speed and sense of responsibility were closely related, but compliance was not found to be related to walking. Very extroverted people walked 0.06 meters per second faster than introverts.

Your walking speed can really show what kind of person you are.

Nonverbal communication is also face/teeth, facial expressions and gestures, hair/beard/hair color and even our jelly.

Research from Harvard's Amy Edmondson observes that staff are creative and productive when managers are inclusive but also humble

and encourage their staff to talk or ask for help.

Psychological protection; improves learning and performance outcomes. More importantly, feeling safe in the workplace helps encourage the spirit of discovery that is critical to innovation.

As we have confirmed in brain imaging techniques, our brains respond more positively to bosses who empathize. Conversely, employees who are more confident perform better. Positive Tone and Body language Key.

Whether we realize it or not, we are constantly reading each other's facial expressions and body language.

The percentage of fat on our face gives as much information as our body mass index about how fit we are. Infection is seen less and milder in those with thin faces.

Depression and anxiety are also more common in these people. How come the degree of fullness of the cheeks tells so much about us?

Benedict Jones of the University of Glasgow attributes this to new insights into the role of fat in the body. Jones states that the location of the fat is important for health, rather than how much fat is in the body. (Glasgow University / Benedict Jones)

3.2.2. WHAT ELSE IS INVOLVED IN NONVERBAL COMMUNICATION?

Non-verbal communication is the way people communicate without speaking or writing.

This is a broad category that includes things like nodding or shaking your head to say yes or no, rolling your eyes to indicate annoyance, or sighing to indicate exasperation or disappointment.

There have been many studies indicating that we use non-verbal communication far more than we do verbal.

Nonverbal behavior is widely recognized as conveying affective and emotional information, although it has other functions as well (such as regulating turn-taking in conversation).

As examples, a frown may convey disapproval or a smile may convey approval or agreement.

• Sweat/Smell/Perfume

・Clothing/Colors
・Accessories;
・Necklace, Bracelet, Ring, Bandana, Watch, Brooch, Badge, Rosary, Hat
・Bag/Wallet/Belt
・Glasses
・Tattoos/Piercing
・Hygiene/Nails/Nail Paint
・Paralanguage ・Voice ・Pronunciation/Intonation
・Writing/Signature
・Instruments Used/ Telephone, Power Battery
・Makeup ・Hands/Calls
・Eyes/Eye Communication/
・Grip/Holding
・Speed/Eating ・Breath.
・Smoking Etc. ・Laughing/Crying Pattern ・Skin Color, Aesthetics,
・ Aspects of Organs/Eye/Foot/Hand/Head Behaviors are all paid attention.

Table 2. Nonverbal Communication Skills

Human gaits could reflect the walker's emotional state, and could be an information source for emotion recognition.

As a most common daily behavior which is easily observed, the body motion and style of walking have been found by psychologists to reflect the walker's emotional states.

Human observers were able to identify different emotions from gait such as the amount of arm swing, stride length and heavy-footedness (Montepare, Goldstein & Clausen, 1987)

Nonverbally, our itching and shaking in the data also gives information.

Two psychologists at New York University, J.A.Bargh and T.L.Chartrand, had a conversation about photography with the subjects they invited to their labs.

The subjects thought that the person in front of them was a person who participated in the research like themselves.

During this conversation, it was recorded that many gestures of

the researchers, such as rubbing their face and shaking their feet, were imitated by the subjects in front of them.[22]

In the later interviews, it was observed that the subjects were not aware of any gestures and mimics that imitated the researcher. The subjects watching the images could not hide their astonishment about their imitation movements. (However, J.L. et al.)

It is used to reinforce verbal communication in the communication process, and verbal communication is supported by regulating emotions and attitudes.

The speaker tries to achieve fluency in speech with the help of hand and arm movements and with the help of his face and body.

At the same time, by looking at the facial and body expressions of the person listening, we have information about whether the other person is listening to him or not and how he perceives the message, and in the meantime, we can catch clues about the psychological state of the person in front of us.

Important information and clues can be obtained by looking at the person's facial expressions, gestures and facial expressions, his current physical distance and appearance. Thoughts are best expressed verbally and emotions are expressed through nonverbal communication (Işık, 2018, p:69).

In a study conducted by researchers from Northwestern University in the USA, it was revealed that our breathing rhythm creates a different electrical activity in our brain, and breathing through the nose or mouth creates different effects on our brain.

It has been proven that brain activity also changes when we breathe in and out. Northwestern University researchers, who conducted an EEG study to electrically monitor the activity in the brain waves of seven epilepsy patients, aimed to reveal the activity that caused the patients to have seizures.

However, the obtained results presented scientists with a very different data: The brain activity of the patients was rising and falling in parallel with their breathing.

Participants were asked to quickly decide whether these facial expressions, appearing on the screen for only a few seconds, indicated

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[22] The chameleon effect as social glue. Journal of Nonverbal Behavior; 27, 2003 /Lakin, J.L. ve ark.

fear or surprise.

The aim of this study was to test the ability of the amygdala, the part of the brain responsible for detecting facial expressions, between breathing and exhalation.

At the same time, it was also taken into account whether the participants were breathing through their nose or mouth.

In order to detect changes in hippocampal activity, 42 participants were shown pictures of different objects on the computer this time, and then they were expected to remember these objects.

The results of the first experiment revealed that participants detected facial expressions more quickly during breathing, and this was only true when breathing through the nose.

The second test showed that participants remembered objects 5% better when breathing through the nose.

To investigate the link between pupil size and intelligence, the Georgia Institute of Technology team tested the volunteers in the study for thinking, attention, and memory.

In addition to its association with excitement and fatigue, the researchers discovered that pupils can also be used to understand individual differences in IQ ratios.

In the study, it was noted that the larger the pupil size, the higher the IQ level.

The research team says this may be because people with larger pupils have better results in regulating brain activity in the region associated with intelligence and memory.

500 volunteers aged between 18 and 35 from the state of Atlanta, USA, participated in the study.

The tests included the ability to think at the moment of the problem, the ability to remember information over time, and the ability to focus even when distracted. Those with larger pupils were found to perform better on tests of attention, memory, and thinking.

In addition, it was noted in the study that pupil size was negatively correlated with age. Accordingly, it was discovered that older volunteers tended to have smaller and narrower pupils.

These nonverbal inferences should be provided by artificial intelligence by dealing with word selection, lying, exaggeration, persuasion and manipulation techniques in a holistic sense.

Profile analysis, on the other hand, is another result of the desire and search to know, define, understand and explain the human being that goes back thousands of years in philosophical terms.

The main purpose of this field, which goes to the depth of non-verbal communication; from human resources to security, from sales to education, from psychology to leadership, is to share and blend information that can be used in almost every profession where human relations are involved.

Why are people interested in this field? First, our modernization journey has also brought us new security concerns.

Now people;

1-Being more comfortable and flexible about people,

2-To look at people and personalities more clearly,

3-Easier to get out of situations that he can describe negatively in human relations,

4-Being a more active role in the events happening around them,

5-Developing new observation methods,

6-To establish a balance between their own needs and the people around them,

7-They are curious to understand the similarities and differences between themselves and other people.

The sounds that people make by imitating the sounds of nature in order to express themselves, the body movements accompanying these sounds, the ones drawn on the cave walls have started to become more meaningful and systematic common structures over time.

Thus, different languages have emerged in different geographies and the words, emotions and thoughts in the language with certain signs; Writing was born by pouring it on paper, stone, soil, wood, and leather.

All of these are a product of human effort to understand and be understood, and are proof of how indispensable communication is for human beings.

Face-to-face interviews, telephone conversations, speeches at meetings, oral briefings, presentations to the public can be given as examples of verbal communication styles.

The biggest advantage of verbal communication is that it is fast

and allows to receive/give feedback instantly.

In verbal communication, emotion readers can be programmed to become aware of an emotion that cannot be heard by an ordinary ear through vocal codes, through intonation and accents, and through word choices.

I just think that it will take time to teach algorithms even that everything said is just something said.

At the same time, appropriate datasets are required for healthy nutrition of high-performance hardware and machine learning systems in order to perform real-time sentiment analysis.

3.3. UNDERSTANDING HUMAN

Situations, which are the manifestations of the human side of being with others, that is, interpersonal space and community attitudes, constitute the object of humanities, but there has been no consensus on how they should be handled until now.

Personality -represents psychological patterns, it co-relates with values and beliefs. Our personalities are shaped over time, which naturally affect our emotional and cognitive disposition.

Knowing who we are and how we communicate leads us to a more intentional action. Psychologist Carl Jung first developed Personalty Typology (later on being adapted into Myers & Briggs personality test), there are other tests like Enneagram (Reformer, Helper, Achiever, Artist, Thinker, Loyalist, Enthusiast, Challenger, Peacemaker) and Big Five (Openness, Conscientiousness, Extraversion, Agreeableness & Neuroticism).

The most obvious reason for this is, of course, the complexity of man and his relationships. However, we can refer to another view by saying that perhaps people do not want to be fully understood.

People most want their expectations to be understood. Therefore, if you know people's wants and needs, it will be easier for you to understand them. This is the first breakthrough that AI has to achieve as well.

3.4. BIOMETRIC

Biometrics is the general name given to the measurements of living organisms. Each person's face is measurably different from another.

Profile identification with biometric face reading; means an analysis of people's facial anatomy, facial expressions and gestures using scientific criteria.

When the verb "Profiling" in English is translated into Turkish; profile analysis means profiling, creating profile and expressing profile.

Understanding people's profiles instantly and quickly becomes more important with increasing security problems. Choosing the right personnel is also the most important human accounting of every company. The human face has its own algorithms.

And every person, like a book, instantly scrapes all the events he has experienced on his face.
For this reason, by looking at the face and body;

 1-Who they are
 2-What they feel/emotions at that moment
 3-What problems do they have in the long term?
 4-What are their potentials
 5-Lies
 6-Personality patterns

We can understand expressive reactions in subjects as above. In this way, it is possible to see beyond words.

Of course, with computer algorithms, we can produce products that can be offered to law enforcement officers by meeting cameras and moreover, these cameras with glasses.

People have been trying to understand the individuals in front of them for tens of thousands of years. And people are not a result of today.

The first profiling studies in the modern sense of the human story; II. During World War II, the "Strategic Services Office" commissioned a psychiatrist named William Lange to profile Adolf Hitler.[23]

Since the 1980s, its importance has gradually increased in developed societies and has been used in many events and cases. It

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[23] Geberth VJ. Practical Homicide Investigation. Investigative Assessment: Criminal Personality Profiling. CRCPress, New York; 1996: 707-93

includes a broad spectrum of researchers, including professionals, forensic scientists, psychologists, behavioral scientists, linguists, who are practically engaged with the profile today.

The profiling technique generally includes the person's age group, race, professional skill level, marital status, socio-economic status and education level of the suspect.

Of course, the algorithm performing this analysis must understand these differences.

Imagine if we could create an algorithm by combining the experience of people working in the field with data from scientific experiments.

Let's go in another direction. Developed by Russian biometrician Viktor Minkin since 2001, artificial intelligence analyzes video images of involuntary micro-movements of a person's head originating from the muscles and circulatory system. Let's test this analysis method and combine its data results with our algorithm.

A face analysis form was prepared depending on the basic indicators in the literature in a study in which it was evaluated whether the face indicators of the successful personnel of the year/month selected in the hotels meet the successful face indicators accepted in the literature.

The study was carried out in two chains and nine independent hotel businesses. In the study; Photographs of 60 personnel in chain hotels and nine years/months in independent hotels were evaluated by hotel management human resources managers.

The results of the study were analyzed according to frequency and preference numbers over 13 face lines and 63 indicators.

According to the results of the analysis, the facial features that meet the successful facial indicators at a high rate; face shape (72.5%), hairline (88.3%), forehead (78.3%), eyebrow (92.8%), eye (88.4%) and nose shape (70.1%) .

Facial lines that meet at a medium level; eyelids (52.2%), lip (59.6%), distance between lip and nose (53.7%), mouth (49.5%), chin (55.1%) and ear shape (47%, 9). In personnel facial physiognomy, the distance line between the eyes corresponded to only one of the success

indicators (the normal distance eye gap was 59.4%).[24]

Current studies examine various aspects and consequences of the process of reading emotion and character from faces. By using faces with neutral expressions, it has been revealed that the personality information transferred on the faces changes the interpretation of verbal information.

It has also been shown that physiognomic knowledge has a consistent effect on decisions and creates overconfidence in judgments. However, it is argued that the process of "reading from faces" is only one side of the coin, while the other side is "reading to faces".[25]

In a study conducted at the University of Colorado, findings were obtained by looking at the ratio of the width of the faces of the football players to their lengths.

Researchers examining the facial shapes of a thousand football players from 32 countries participating in the World Cup held in 2010 stated that the success rates of players whose face width is longer than their length are higher.

Accordingly, these players score more goals, but their fouling rate is also higher. quite high.

The ratio of the width and length of the face is calculated by dividing the distance between the middle of the eyebrow and the upper lip by the distance between the cheekbones.

Durham, St. Andrews and Aberdeen Universities, according to a study of 700 heterosexuals in their twenties, the vast majority of subjects can guess from a glance at a person's face whether they want a long-term relationship or just one night's pleasure.

According to the study, men with hard lines, a square chin, large nose, and smaller -than- average eyes are considered more suitable for short relationships by women, while women with fleshy lips and larger-than-average eyes are thought to send a non-long-term sexual message to the other party.

Testosterone is also linked to aggression, making broad-faced men always considered the more ready-to-fight type, according to

[24] Fizyonomi ve Otel İşletmelerinde Yılın/Ayın Personeli Üzerinde Bir Uygulama Yıl 2020, Cilt 7, Sayı 2, 325 - 338, 19.10.2020 Meryem AKOĞLAN KOZAK Dönüş ÇİÇEK

[25] Hassin, R. ve Trope, Y. (2000). Karşı karşıya kalan yüzler: Fizyonominin bilişsel yönleri üzerine çalışmalar. Kişilik ve Sosyal Psikoloji Dergisi, 78 (5), 837-852. https://doi.org/10.1037/0022-3514.78.5.837

research published in the journal Psychological Science.

Moshe Eizenman, principal investigator in eye tracking at the University of Toronto, Canada, said: "Visual scanning shows how the world is perceived in each individual's brain.

The world perceived by individuals with mental illness is somewhat different from that of normal people. By following the eyes, these different worlds can be seen."[26]

According to the news of the Huffington Post, for example, while autistic children prefer abstract images, on the contrary, they avoid social images. In addition, autistic children make less frequent eye contact when looking at faces in pictures or videos than non-autistic children.

The term "artificial intelligence psychiatry" may slowly start to come into use.

Similar to this example, scientists found that abnormal eye movements are associated with other mental illnesses. These examples can be multiplied.

In addition, algorithms can be combined with research on face and facial expressions. Face, mimics and gestures are evaluated in different parameters.
We have 8 (eight) basic emotions.

We are all born with these feelings. There is no general consensus that these existing emotions are learned in emotional, social and cultural contexts. Despite this, it is widely accepted that there are eight basic emotions: Happiness, Sadness, Fear, Surprise, Anger, Interest, Disgust, Shame.

Expression of emotions such as surprise, fear, anger, surprise,furious, sadness, disgust, happiness are known as unconscious mimics (Geçikli, 2008, p:310-311).

Happiness:
Joy, cheerfulness, pleasure, relaxation, delight, gratification, pride, excitement and enthusiasm,
Sadness:
Sorrow, pain, gloom, melancholy, hopelessness, loneliness and depression,

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[26] Paul Ekman ; Ne Düşündüğünü Biliyorum

Fear:	
Anxiety, worry, nervousness, timidity, horror and panic,	
Surprise:	
Surprise, wonder, shock, astonishment and Curiosity,	
Anger:	
rage, anger, wrath, irritability, hostility, resentment and violence,	
Interest:	
Curiosity, acceptance, friendship, trust, compassion, love and commitment,	
Disgust:	
Disgust, contempt, insult, arrogance, hatred, dislike, dislike,	
Shame:	
Guilt, disappointment, remorse, regret and sadness.	

Table 3. Emotions

Emotions are important in terms of understanding the behavior in the organization as they can affect behavior in many ways (Özkalp & Cengiz, 2003). Emotional life is not independent of the environment in which it occurs.

It is a fact that various emotions are felt in the working environment (Rafaeli & Worline, 2001). Especially in today's societies, one of the strongest emotional environments is the work environment in which people participate (Seçer, 2007).

Mimics are the reflections of emotion that occur when 20 muscle groups on our face contract and relax with messages from the brain.

The emotion we feel inside, but intense, manifests itself outside the body. Mimics are therefore observable, behaviors of emotions reflected from the inside out.

Mimics have the power to initiate, maintain and end a communication. Mimics make the face meaningful (Kaşıkçı, 2006, p:91-92)

It is possible and possible for emotional readers to develop to understand all human emotions, starting from basic emotions.

By giving an example of Robert Plutchik's Emotion Wheel below, an algorithm can be developed from the center outward.
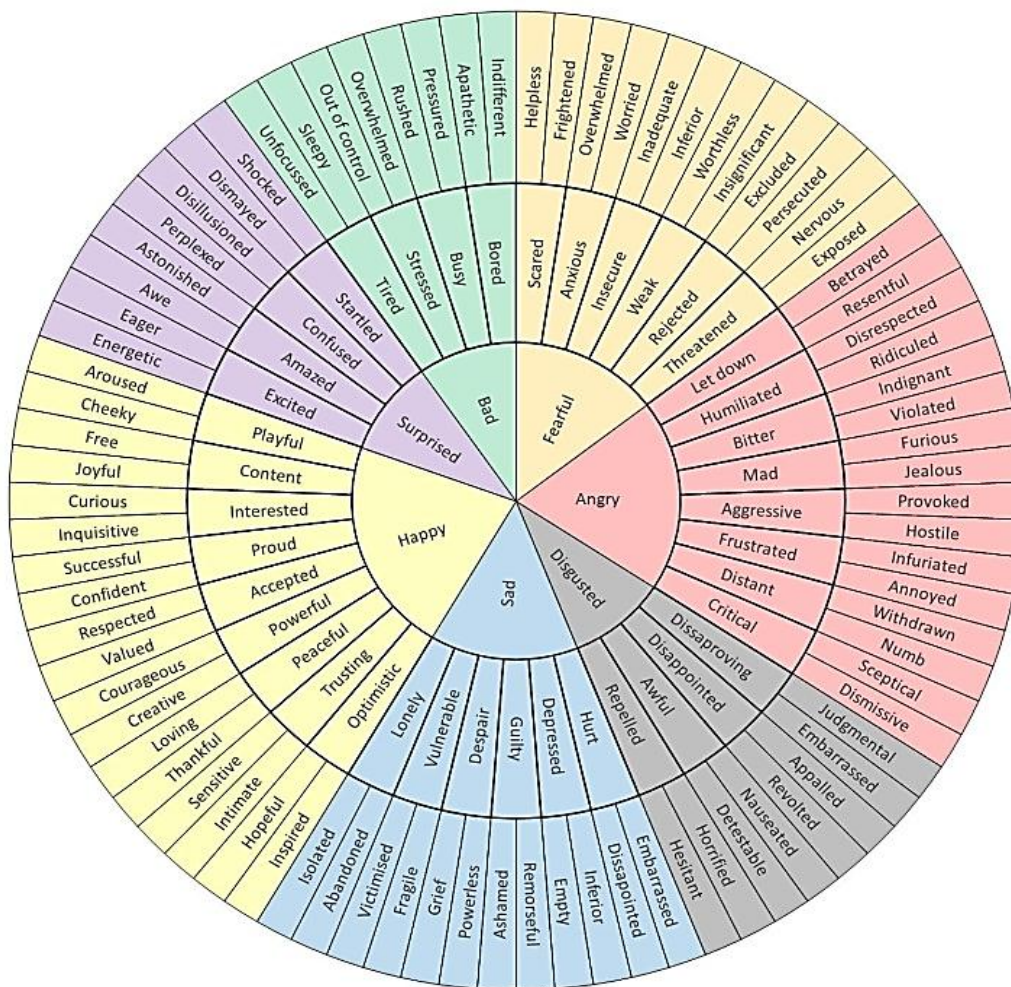
Figure 3. Wheel of Emotion

All other emotions are made up of combinations of these basic 8 emotions. These are our emotional reactions to a situation or event. We learn by experiencing these emotions. And all of these feelings are reflected in our face, body and behavior beyond words.

Emotions inform the individual about the events taking place around him and affect his personal goals (Özkalp & Cengiz, 2003; Yelkikalan, 2006).

Emotions are the basis of behavior. Emotions motivate people and guide behavior. For this reason, it is expected that the employees in the organization understand their feelings, direct and mobilize them in line with the goals of the organization.

In addition, employees need to establish social relations with other colleagues and use their empathy skills effectively in their relations. In this sense, it is very important for employees to use their emotional competencies effectively in business life (Titrek, 2007, 100).

We can obtain new data by combining mimic studies on how emotions are reflected on the face with studies on the anatomical features of the face.

We can make an advanced software that can analyze the results by combining the data we have obtained and to be obtained with the experiences of analysts, law enforcement officers, human resources specialists, estheticians and many professional professionals.

And you can use this software with an example device with a sim card inserted, glasses etc. Imagine that we have made it so that any person can use it easily in daily life.

When we focus on the face of any individual in front of us, with the help of these products; current emotional changes; How can a sentiment reader be able to interpret instantaneous, medium and long-term variables and their potentials as an outcome analysis?

This analysis can also be carried to a reportable level.
Also, who can deny the fact that we can make a big difference by making these algorithms available to people who cannot read faces (Prosopagnostic-face blindness)?

Note: Prosopagnostic individuals cannot recognize faces. (Source: Wikimedia Commons)

Figure 4. Prospagnostic Individuals[27]

With the example of wearable technology that can perform biometric analysis, in addition to glasses and cameras, voice tracking and lie analysis can also be performed with voice analysis hardware and algorithms.

"It is not what we say, but how we say it." is good example for intonation of voice, emphasize of words and meaning of message (Oyur and Sonmez 2010,s135)

Studies have revealed that voice is an important emotion carrier and can be used in many analyzes. Sound is a channel for conveying a person's deepest thoughts and feelings.

Because sound is linked to areas of the brain associated with emotion, vocal changes are difficult to hide when certain emotions occur. The voice is a tool that gives the characteristics of the person.

In Prof. Paul Ekman's book "I Know What You're Thinking", he says that one of the codes for reading people is the vocal code, namely the pitch, quality, loudness and style of the voice. There are 20 different character descriptions in the book.

 In addition, a regular flow of information can be provided with the data coming to the glasses via the camera, and an audio data opportunity can be offered for people with disabilities who cannot read, via headphones.

Aestheticians can also use the images that come to the screen with a small difference to be added to the algorithm in the glasses in question.

A millimetric plan can be made for the necessary interventions by seeing the facial analysis of the patients in three dimensions in the form of inspection and design with the measurements obtained from the patients.

In the next phase, we can also teach people this collected data by developing algorithms that analyze gait and body language.
Using simulation as in pilot training, the following items can be presented to people through training.

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[27] Biometric Face Reading and Profile Identification Methods/ ISBN 978-605-89832-1-2 p12

With simulation;

•Posture (Standing)/Walking/Sitting/Selection of Place
Our personality the unique combination of emotional and behavioral characteristics that make us who we are causes us to adopt certain postures. On the flip side, our posture affects the way we feel inside and how we behave, especially once the posture has become deeply learned and we are stuck in it all the time.
•Face/Teeth •Mimics and Gestures
•Hygiene
The routines people do every day say a lot about what's going on inside their mind. As many different types of personal hygiene there are, there are different personalities that go along with them.
•Voice
•Pronunciation/Intonation
Eyes/Eye Communication
•Breath •Aesthetics

Table 4. Nonverbal Communication Skills

It will be easier to understand all non-verbal communications such as above and both verbal and nonverbal elements such as lies, persuasion and manipulation.

We all give out different signals according to our mood. So much so that if you are a good observer, you can easily understand whether the other person's attention is on you, whether they are bored with you or even if they like you. But what if we're missing split-second events?

Different emotions such as anger, furious, tension, happiness can be understood by people's body language.

All emotions are impulses that enable an individual to take action. Each emotion in an individual's emotional repertoire has its own unique role. Each emotion prepares the body for different reactions. These biological tendencies that put the individual into action; it is shaped by experiences and culture (Goleman, 2007).

Knowing this language well, of course, strengthens your communication, allows you to understand and be understood correctly.

But with a little training or technology support, this could be easier.

For example, surprise is the emotion with the shortest expression

time. It is felt when an unexpected or unexpected event takes place.

・Can we catch clues that people cannot understand by staying in the moment with an algorithm that keeps this time while talking?
・What could an artificial intelligence change that can immediately understand whether the person in front of us is uncomfortable with us?

Note: The human face, like the human body, expands during the relaxation process and shrinks during the discomfort period.

Two assumptions; the existence of an "emotional reflex" based on the idea that the body's system responsible for balance and spatial orientation is related to psychological and emotional states.

And the thermodynamic model of emotions that establishes a direct link between certain emotional-mental states and the amount of energy expended by muscles.

3.5. HABITS, TEMPLATES AND BEHAVIOR

1-It consists of human habits and patterns.
2-Man is responsible for some of his habits and behaviors.
3-People are not responsible for some of their habits and behaviors.
4-There are some habits and behaviors that are imposed on people.
5-There are some habits and behaviors on which a person is based.
6-There are also habits and behaviors that are sometimes thought to be imposed on people.

And we can say that at every moment of this journey, the concept of "Personality" is formed as a result and which maintains its variability. Sheldon: "Personality is the result of human habits." We can also attribute the proposition to this variability.

The value of being able to quickly understand what personality is through algorithms is undeniable. So, how can we quickly understand habits and behaviors?

The experiences that a person has throughout his life leave bodily traces.

The organs in which these traces are most clearly seen are the

face and hand regions, where the human brain carries the most functions in terms of content. The accuracy of such information is increasing day by day with today's nonverbal communication experiments and researches.

Habits & Rituals — together with behaviors, they are inseparable. Persistent behaviors over time form habits, when cultural setting influenced our habits, it transforms into ritual.

Profile analysis is an analysis method that enables to obtain important information about people by examining the whole process from the beginning of the communication until the end of the conversation.

Each of us is the result of a human history of hundreds of thousands of years, with the genetic inheritance we brought from our ancestors.

Cook (1971 as cited in Smith, 1979: 634) grouped nonverbal signs into two main categories; the first is "stationary nonverbal signs" that do not change during interpersonal interaction, and the second is "non-stationary movements" that change during interaction.

Static signs: a. face, b. physics, c. sound, c. clothing and man-made ornaments, accessories, d. make-up e. hair style.

Non-stationary signs if: a. orientation and adaptation, b. distance c. posture, c. gestures, d. wide body movements, e. facial expression f. direction of view, g. tone of voice and i. speech rhythm, amount and fluidity.

3.6. SIGNALS

Language is deceptive. A person can say one thing and mean something entirely different or intentionally mislead another person through lies. But misleading someone with their body language is much more difficult, since a big part of it happens subconsciously. Through someone's gestures, facial expressions, and posture, you're able to read into how a person is feeling.

Many studies; asked the participants to walk on the treadmill, to whom they were shown a list of positive and negative connotations such as "nice", "scared" and "anxious", and thus determined the participants' gait and body posture.

During a study by Troje, researchers showed participants a pointer that moved left and right on the screen depending on whether their gait was "depressed" or "happy", and then asked some participants to try to move the needle to the right and others to the left, unaware of what the needle was moving. .

The researchers, who quickly realized what they needed to do to move the needle to the right or left, then asked the participants to write down the positive and negative words they remembered from the list shown to them at the beginning of the study.

At the end of the study, it was determined that the participants who imitated the walking style of depressed people remembered more negative words, while the other group remembered more positive words. The researchers emphasized that this result revealed that the depressed gait pattern created a more distressed mood.

Troje stated that the research is based on previously obtained information on the effect of mood on people's memory.

Noting that it is known that people who have had severe depression that required hospital treatment, remember more negative moments than positive ones, especially in the events related to them, Troje said that remembering bad moments causes these people to feel even worse.

"If we can break this endless cycle, we can have a powerful healing tool that can help depressed patients," said Troje.

The most used signals are:

Crossing arms,
Smile,
Tilting the head to the right or left
Pulling or holding the ear,
Making eye contact,
Watching the ground, looking down,
Touching the nose,
Caress the chin,
Eating nails,
Clenching fist.

Table 5. Signals

Besides subconscious body language we also send out conscious body signals. This is language that we're trained to understand and is conditioned by our cultural surrounding.

We apply it in suitable situations, to send a certain message, or to underscore what we're saying. Typical examples of this include the raised index finger for "Attention!", the thumbs up for approval, or open hands to cool down a situation or to appease emotional breakouts. But you should act with caution, as body language is always read within a cultural context.

The majority of studies that investigated the neural mechanism of hand gesture processing focused on the overlapping activations of words and gestures during their semantic comprehension and integration. However, it was shown that, gestural stimuli can convey more than semantic information, since they can also express emotional message.

A first example came from the study of Shaver et al. (1987) which tried to identify behavioral prototype related to emotions (e.g., fist clenching is involved in the anger prototype). More recently, Givens (2008) showed that uplifted palms postures suggest a vulnerable or non-aggressive pose toward a conspecific.

However, beyond hand gestures investigations, emerging research about the role of motor system in emotion perception dealt with the study of mechanisms underlying body postures and facial gestures perception (De Gelder, 2006; Niedenthal, 2007; Halberstadt et al., 2009; Calbi et al., 2017).

A certain hand gesture can have an entirely different meaning on another continent or in different cultural circles.

3.7. MICRO EXPRESSIONS

Micro Expressions are universal; that means, it does not differ between a primitive tribal woman and a scientist in the most developed country, it is the same for everyone.

Micro-expressions, the fleeting and involuntary facial expression, often occurring in high-stake situations when people try to conceal or mask their true feelings, became well-known since 1960s, from the work of Haggard and Isaacs (1966) in which micro-expression was firstly

termed as micromomentary facial expressions, and later from the work of Ekman and Friesen (1969).

Micro-expressions are too short (1/25 to 1/2 s) and subtle for human eyes to perceive. Study (Ekman, 2002) shows that for micro-expression recognition tasks, ordinary people without training only perform slightly better than chance on average.

Computer vision and machine learning methods for automatic micro-expression analysis become appealing. Pfister et al. (2011) started pioneering research on spontaneous micro-expression recognition with the first publically available spontaneous micro-expression dataset: SMIC, and achieved very promising results that compare favorably with the human accuracy.

Paul Ekman, together with Wallace Friesen, classified the Facial Coding System based on facial muscle anatomy in 1978.[28]

According to this classification, he identified the micro-expressions corresponding to the seven universal emotions;

Happiness: Cheeks rise. The lip edges are pulled back and lifted up. Wrinkles occur on the skin under the eyes, on the nose, upper lip and outer parts of the eyes.

Contempt: The lip edge is stretched and slides in one direction. It is the only expression that covers only one side of the face. Half of the upper lip lifts up and closes tightly.

Disgust: Upper lip lifts. A general asymmetry occurs. Wrinkles occur around the nose and upper lip, on the forehead. Cheeks rise and crease under the eyes.

Anger: Angled and low eyebrows. Nervous under eye. Open upper lip as if tense or shouting. A distinctive look.

Fear: Raised and tense eyebrows. Raised upper and lower eyelids. Tense lips. Sometimes the mouth may also be open.

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[28] Yalan söylediğimi nasıl anladın? Prof. Dr. Paul Ekman

Confusion: Raised and rounded eyebrows that stretch the skin underneath. Open eyelids (upper raised, lower lowered). The chin drops.

Sadness: The outer sides of the eye make a downward angle. The skin of the eyelids takes the shape of a triangle. The edges of the lips look down, the lips may tremble.
Microexpressions have many properties.

 These features can be listed as follows:

Although gestures and facial expressions are national/local, micro expressions are universal.

Micro expressions are facial expressions that allow messages to be better understood.

A person reacts to the messages he receives from the outside world by passing them through his mental processes. The most important part of the reaction is formed by subconscious reactions. A person tries to hide his true thought while putting it into words, but he can never hide it. Because one's body, voice, movements reveal the truth.

Micro expressions are involuntary facial movements. While making these movements, the person cannot be aware of the movement because these facial expressions are formed with unconscious elements.

For this reason, detecting micro-expressions of the person in catching criminals is very useful and ensures that the person can be identified before committing a crime.

Microexpressions are automatic. Even if the person tries to hide something, micro-expressions that come into play automatically and get their power from the subconscious make the person unable to hide things for a long time.

Microexpressions occur in a very short time, so sometimes these expressions may not be caught. An educated person on this subject catches these expressions in a shorter time than an uneducated person.

These expressions, which have these and many similar features, may not always appear in everyone.

The fact that these expressions are much more specific is related to how the amygdala works, which directs the emotional reactions of the person. In addition, a person who has the ability to read micro-

expressions can read the facial expressions of the other person.

But external factors; that is, wearing make-up, wearing glasses, growing a beard and mustache are the factors that make micro expressions difficult to read.

The act of reading microexpressions is important in understanding human responses in many business areas.

In order to prevent dangerous events such as bombings, suicide attacks and assassinations, people with the ability to read micro-expressions are used in areas such as airports and stations.

It is very important to be able to read people's faces in order to prevent such dangerous acts.

Being able to read people's facial expressions, while preventing various dangers, harms the privacy of people.

This is a highly controversial topic. Various people have different opinions on this matter.

Because we know that there are various courses for reading microexpressions. People go to these courses and learn various information in order to be able to read micro expressions and specialize in this subject.

Studies have shown that there is a parallelism between the tones of people's voices and their personalities.

For example, there are many characteristics that make a woman attractive in the eyes of a man.

However, if you are considering a long-term relationship, you should also pay attention to your voice.

A study published in the journal Evolutionary Psychology noted that men with lower voices cheat more. For women, the opposite is true. Women with a higher voice are much more likely to cheat. So why?

Within the scope of the research, digitally adjusted male and female voices were played to the volunteers. Then "Do these people cheat or not?" questions were asked.

The head of the research is Jillian O'Connor; "From a sexual strategy perspective, we see that men and women can use their voices to hint at the possibility of cheating. So the more attractive the voice—which is usually loud in women and hoarse in men—the more likely that person is to cheat," he said.

Research shows us how we should act when choosing our mate.

But how can we be so sure that that person is deceiving us just by looking at the sound?

Psychologist Prof. David Feinberg; "Men with high testosterone levels have a quieter voice. In women, the higher the estrogen level, the louder their voice. And the excess of these hormones determines the person's interest in the opposite sex.

In addition, when we add the sound to our inference of the testosterone hormone by profiling, we can understand whether the person is dominant or not, the risk taking coefficient, the level of sacrifice.

We can move forward by adding this data to our algorithm. Also, Psychologist Prof. David Feinberg; "Men with high testosterone levels have a quieter voice. In women, the higher the estrogen level, the louder their voice. And the excess of these hormones determines the person's interest in the opposite sex.

3.8. CLASSIFICATION OF GESTURE AND MIMICS

This is another issue that algorithms may be surprised at. We can classify the gestures and mimics we have in two areas.

1- Gestures and Mimics that Matter (Such as Laughing, Frightening, Frowning-Angry, Surprise, Fear-Mocking, Embarrassed)
Gestures are often performed consciously to convey some specific meaning
(e.g., the thumb up gesture that means "OK") or to perform a specific action (e.g., to point at something with the index finger), but in many cases they are the result of some affective process and they are displayed outside conscious awareness (Poggi, 2007).

2- Secondary Gestures and Mimics (If done consciously, such as sneezing, coughing, yawning, they are the first part of gestures and mimics.)

Gestures and facial expressions appear as the expression of reflective-momentary emotions. These outputs may not be related to the spoken words. What you mean "Yes" raising the eyebrows and

giving the message "No" can be given as an example.

One of the reasons why criminals are caught on camera during interrogation is the fact that we can obtain the most detailed information about lies with gestures and facial expressions. Sometimes a 30-second snapshot of an individual being questioned can become data that requires hours of monitoring by a profiler.

3.9. VOICE AND PERSONALITY ANALYSIS

Sound is a channel for conveying a person's deepest thoughts and feelings.

Because sound is linked to areas of the brain associated with emotion, vocal changes are difficult to hide when certain emotions occur.[29]

The sound can indicate the strength of a man, that is, the strength of his upper body. Participants of one study listened to the native-speaking voices of men from different countries and then evaluated their strength.

As a result, they were able to accurately determine how strong the men were. Stronger men had a deeper voice.

The voice is a tool that gives the characteristics of the person. In the book 'I Know What You're Thinking', Prof. Dr. Paul Ekman, one of the codes for reading people is the vocal code, namely the pitch, quality, loudness and style of the voice.

There are 20 different character descriptions in the book.

Here are some of them;

Low, Full, Peppy Tones:
People with this type of voice pattern are perceived as more believable, sexier, smarter, and more trustworthy.
They are in control of their lives.
Their voices do not tremble.
Rock-solid people use this tone of voice and speak from their minds and

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[29] Adaptations in humans for assessing physical strength from the voice Aaron Sell Gregory A. Bryant Leda Cosmides John Tooby Daniel Sznycer Christopher von Rueden Andre Krauss and Michael Gurven Published:16 June 2010https://doi.org/10.1098/rspb.2010.0769

hearts.

These are frank, sincere people and have ensured their integrity.

Very Low Sound:

They are the opposite of what others want to believe.

They want you to believe that they are shy, innocent, and dignified.

In reality, you will often find that they drive people out of the blue and into a rage.

This is their power game.

Very Loud Sound:

They are often pretentious, arrogant, socially unaware, controlling, rowdy, competitive, angry with a lot of hostility.

They are insecure and need an audience to listen to what they have to say. Otherwise they can't do anything.

Flickering Voice:

They are mostly people who are afraid. They are shy or indecisive.

They are afraid to start and choose a business because they are often too worried about the backlash of any action.

They cannot cope with many stresses in life.

Vocal Attackers:

People who attack with their tone of voice are often angry, aggressive and competitive.

Offensive tones are seen with occasional periodic bursts of loud sound during a conversation.

They vomit outbursts of anger or hatred like machine guns throughout communication.

They are highly competitive and always seem to be looking for a way to beat their opponent, even in the simplest of conversations.

Hectic, Manic Tones:

Such people are domineering, controlling, and have to be in the center of attention.

If you try to get some attention, one of two things will most likely happen: He will either bring the conversation back to his own troubles or make a sudden exit. Who cares about you?

Talking Too Fast:
These people are extremely anxious, irritable and may be angry.
They are generally insecure and have low self-esteem.
They can also be aggressive, extremely impulsive, and full of a passion for success.

Regardless of the reason(s), many people who speak quickly may also be communicating ineffectively. Speaking fast without taking time to slow down or pause when appropriate may have the following, undesirable effects:[30]

Higher vocal pitch with less strength and power
Lower clarity and articulation
More "umm…s" and "ahh…s" (fillers)
Reduced comprehension by the listener
Reduced communication impact on the listener
Important points in the message may be lost or de-emphasized.
The speaker may seem less poised and less grounded, lacking gravitas.
The speaker may be perceived as having lower credibility.

Variable, Cut and Strong Tones:
A person who speaks in such a measured tone is usually stubborn, often picky and snooty, self-righteous and extremely rigid.
This type of person pays attention to the smallest details.
He is often headstrong and does not conform to the will of others. It is often difficult to bend or compromise it.

Those Who Speak With a Nasal Voice Without Moving Their Jaws:
They are more angry, more judgmental, more complaining than those who move their jaws in this way. These people have a more suppressed ambition. They are usually formalistic, ruthless types.

Exaggerated Tones:
When they say one thing, they actually mean something else.
Be extremely careful when you hear someone speaking in such a

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[30] How To Slow Your Speaking Rate To Sound More Composed. By Kaja Perina / Psychology Today

tone of voice.

If you're an extrovert or introvert, your voice can indicate your personality or more specifically. During one study, people listened to computer-generated speech that was modeled to sound like the voices of introverts and extroverts.[31]

As a result, participants were able to identify personalities. Extroverts speak faster and louder, and introverts, on the contrary, express their thoughts more quietly and more slowly.

Your voice can show how tall you are. Over the course of 2 experiments, people were asked to identify the tallest of 2 speakers and place 5 speakers at a height. 62.17% of the participants were able to distinguish the longer speaker.

The taller the person, the lower and deeper their voice.

Your voice can also have an impact on your career. One study found that people with vocal fry appear less educated and less competent. And this is especially true for women. This may even influence an employer's decision and lead them to choose another candidate.

The Perceptual Communication Analysis Laboratory at the Autonomous University of Barcelona conducted a study on tone of voice and perception. Interesting findings emerged from this research, some of which are:

Normal Voice; self-control and listening ability.[32]

It indicates a deep tone of voice and builds confidence in other people. This is also a tone often used in advertisements.

A firm and confident tone of voice suggests that the speaker is a distinguished and important person.

Speaking in a quiet tone suggests that the person has a weakness or is a strange person.

People with a high-pitched voice, on the other hand, do not convey a very reliable feeling.

High: weakness, selfishness and impatience.
Low: inexperience and timidity.

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[31] Journal of Experimental Psychology: Applied 2001, Vol. 7, No. 3, 171-181
[32] Does Computer-Synthesized Speech Manifest Personality? Experimental Tests of Recognition, Similarity-Attraction, and Consistency-Attraction

Pronunciation or vocalization:
Vocalization is about a person's intelligibility and desire to be understood:
This tells you the emotional state the person is in:

Slow: lack of interest, disconnection from the world.
Quick: tension, desire to hide information.
Regular: holding back, concealing, unnatural.
Disorganized: confusion, anxiety, lack of communication[33]

The researchers discovered that a lower pitched voice is associated with individuals who are more dominant, extrovert and higher in sociosexuality (more interested in casual sex). The findings were true for women as well as for men.

The researchers analysed data from over 2,000 participants and included information from four different countries. Participants filled in questionnaires about themselves to measure personality and provided recordings of their voice so that the pitch could be measured using a computer programme.

This is the first time that an objective digital measure of voice pitch has been used in a study of this kind, rather than subjective ratings of how "high" or "deep" a voice might sound.

The researchers measured "sociosexuality" by collecting responses about sexual behaviour, attitude and desire.

They also collected data to provide ratings of dominance and other character traits such as neuroticism, extraversion, openness to experience, agreeableness and conscientiousness.

The number of participants helps to confirm the robustness of the findings: the study involves the largest number to date compared to similar research in this theme.

The researchers found that people with lower pitched voices were more dominant, extroverted and higher in sociosexuality (eg were more interested in sex outside a relationship).[34]

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[33] Vocal Fry May Undermine the Success of Young Women in the Labor Market Rindy C. Anderson,Casey A. Klofstad ,William J. Mayew,Mohan Venkatachalam Published: May 28, 2014
[34] The results were published in the Journal of Research in Personality.
https://neurosciencenews.com/personality-voice-
18427/#:~:text=Summary%3A%20A%20new%20study%20reveals,difference%20between%20men%20

3.10. BREATH

It was suggested that there existed in a series of patients with a diagnosis of schizophrenia a type of breathing which was characteristic of a considerable number of this particular group. According to many studies and experts, it is argued that there is a parallelism between people's breathing and their emotions.

For example, Jung developed the word association test to reveal the personality complexes of his patients.

In the word association test, a word is read to the patient and the patient responds with the first word that comes to mind. The person's reaction time, breathing time, and skin conductivity are measured.

If the response time is prolonged when the patient says the word that comes to mind, if there is an irregular breathing and a difference in skin conductivity (itching or the desire to touch any part of it), it is concluded that there is an emotional problem with this word.

Breathing doesn't just fill our lungs with oxygen and keep us alive. A new study reveals that breathing also shapes our minds.

The study was carried out by researchers from Northwestern University.

This new study revealed that our breathing rhythm creates a different electrical activity in our brain, and that breathing through the nose or mouth has different effects on our brain. It has been proven that brain activity also changes when we breathe in and out.

Northwestern University researchers, who conducted an EEG study to electrically monitor the activity in the brain waves of seven epilepsy patients, aimed to reveal the activity that caused the patients to have seizures.

However, the obtained results presented scientists with a very different data: The brain activity of the patients was rising and falling in parallel with their breathing.

Participants were asked to quickly decide whether these facial expressions, appearing on the screen for only a few seconds, indicated fear or surprise.

The purpose of this study was to test the ability of the amygdala, the part of the brain responsible for detecting facial expressions, between breathing and exhalation.

At the same time, it was also taken into account whether the participants were breathing through their nose or mouth.

In order to detect changes in hippocampal activity, 42 participants were shown pictures of different objects on the computer this time, and then they were expected to remember these objects.

The results of the first experiment revealed that participants detected facial expressions more quickly during breathing, and this was only true when breathing through the nose.

The second test showed that participants remembered objects 5% better when breathing through the nose.

In short, we can think better, remember better and detect faster while breathing through the nose.

We can also add data about breathing patterns to our algorithm.

Chapter 4

4.1.LIE

Lie; Due to its psychological, sociological and economic relations, thousands of studies have been made about it and it has been discussed by scientists and thinkers throughout history.

When it comes to lies; Whatever is said, whatever is written, it is perfectly normal to question its veracity.

When we enter the business world and have a family, to a world ravaged by fake virtual friends, biased media, masterful identity thieves, world-class pyramid schemers, an epidemic of deception, in short and in the words of one author (Pamela Mayer); We are entering a society that is both post-truth and post-honest.

For this reason, AIs will provide more positive contributions with all the factors of emotion recognition by combining many elements in lie detectors in the future.

4.2. SIGNS OF LIE

If you have produced evidence of a crime, of course, you do not need to look for signs of a lie. But if you can't find the evidence, or if you expect a confession despite the evidence, it will be very helpful to know the signs of lying.

Sign; They are the shapes we use to indicate an entity, an event, a situation.

For example, selfish, narcissistic people tend to tell above-average, non-white lies.

While these people feel special and important, they tend to put their own interests above the society.

For these reasons, while they tend to use implicit behavioral expressions more; at the same time, they cannot put a realistic smile around the mouth and lips.

For similar reasons, we can say that a lie is a sign-sign (Symptom) or, in other words, an expression.

•Covered verbal signs,
•Implicit behavioral signs,
•Direct verbal or cognitive cues,

•Direct behavioral signs;
•Indirect behavioral signs.

Table 6. Sings of Lies

S.Freud: "Man who has eyes to see and ears to hear must know that no mortal can keep a secret. If his tongue is silent, he will speak with the tips of his fingers, and betrayal oozes from every pore."

4.3. BEHAVIORAL SIGNS OF LIE

Mouth Movements
Eye Movements
Backward Leaning Motion
Foot Movements
Swallowing and Throat Clearing
Head Movements
Hand gestures
Nose Touching Gestures

Although being able to lie easily and writing stories on this lie is considered a sign of a biological, sociological or psychological disorder in adults, some researchers think that there are people who have trouble telling even innocent lies, and there are many things behind this behavior.

If a person's body language and voice and the words he says do not match with what he says, it is an indication that the person is lying or has a problem.

● Between sound and words,
● Between the voice and the movements,
● Between actions and words,
● It's a clue when you find a mismatch between facial expressions and words.

Same way; If there is a time lapse between actions and words, the probability of lying increases. It can be a conflict of one attitude with another.

Pulling one's ear may mean something is being said that they don't want to hear.

An example of this is that children cover their ears with both hands when they encounter an undesirable situation.

Another interesting point is that although these gestures and facial expressions vary according to age, they do not differ much according to culture.

Some people may also cover their mouths with a fake cough to hide their lies.

Aldert Vrij and his colleagues conducted a study using the speech of people who were interrogated by the police to find out which nonverbal expressions indicate a lie and which are not a sign that the person is lying.

If someone raises their eyebrows when asking a question, they know the answer to the question.

When people do not feel safe, they seek support with their hands. Meanwhile, the hand tries to find the support it needs by grasping things such as pens, bags, books, key chains, glasses.

The interlocking of the fingers often indicates a negative mood or disappointment.

If the chin is slightly raised, it is usually a sign of pride.

Body language is a tool for understanding real thoughts and feelings.

The tongue speaks, the body affirms it, the body speaks the tongue affirms it.

In addition to understanding these symptoms, artificial intelligence will also need to learn to categorize the causes of lies in the future.

4.4. LIE MACHINES

The first lie detectors were invented in the early 20th century. The most well-known of these is the analog polygraph, which measures with the movement of three or four ink-filled needles on paper.

In this machine, sensors attached to his fingers, arms and body measure his pulse, respiratory rate, blood pressure and sweating while the suspect answers a number of questions.

But there are concerns about the accuracy of these machines and the possibility of being duped. That's why researchers and technology firms around the world are working to produce a more advanced

polygraph.

Prof. Hanein and his colleague Prof. Dino Levy heads the team at Tel Aviv University in Israel to develop a new lie detector method.

They say they have identified two types of liars. Some involuntarily move their eyebrows while lying, while others make a very slight movement where their lips meet their cheeks.

The team's software and algorithm can now detect 73 percent of lies. While developing the system, they plan to improve it as well.

Prof. "When you're trying to hide a lie, you avoid any bodily response," says Hanein.

"However, hiding a lie with this technology is very, very difficult," adds Prof. Levy.[35]

4.5. CLASSIFICATIONS OF LIES

Lies have been grouped differently by different researchers.

For example, Semai and Necla Tuzcuoğlu (2005) divide the lie into two groups:

 1. Lies that harm a person or someone,
 2. Innocent lies that don't hurt someone or anyone

According to the Reasons;
1. Because of lies, pride and arrogance,
2. The need to delay pain,
3. Out of the anxiety of not being understood,
4. By habit
5. To ridicule and tease,
6. To get rid of doing a difficult job,
7. In order not to say "I don't know",
8. To exaggerate the events experienced or witnessed,
9. To do evil or deceive,
10. To demonstrate,
11. To generate profit and income,

[35] https://www.cumhuriyet.com.tr/bilim-teknoloji/yuksek-teknolojili-yalan-makineleri-kameralarla-yalan-tespiti-yapabiliyor-1904137

12. To justify or prevail in an argument,
13. With the "white lies" deception
14. While promising something he knows he cannot/cannot do,
15. Or it is said in fear of people.

According to the Direction
1. So-called Lies,
2. Confessions
3. Habitual Lies
4. Imaginary-Fantastic Lies
5. Imitation Lies
6. Lies of Exaggeration
7. Social Lies
8. Defensive Lies
9. Attention-getting Lies
10. Sublimated Lies
11. Lies to the Opposite
12. Vengeance Lies
13. Lies Telling for Benefit
14. Pathological Lies
15. Propaganda Lies
16. Conditional Lies

According to the Relationship;

1. Bragging,
2. to deceive,
3. Cover up,
4. to mislead,
5. Exaggerate,
6. Invent something out of whole cloth,
7. Confusing,
8. Distorting Information,
9. Love Lies,

10. Sins-Morality.

Table 7. Classification of Lies

If a person's body language and voice and the words he says do not match with what he says, it is an indication that the person is lying or has a problem.

• Between words with sound,

• Between voice and movements,

• Between gestures and words,

• It's a clue when you find a mismatch between smiley expressions and words.

Same way; If there is a time lapse between actions and words, the probability of lying increases. It is the contradiction of one attitude with another.

4.6. BODY LANGUAGE CODES ABOUT LIE

Timothy Levine of the University of Alabama in the USA says that lying provokes some strong emotions such as excitement and guilt, and it is difficult to contain these emotions.

Levine claims that even when we think our faces don't reveal anything, certain "Micro Expressions" that develop against our will betray us. "The body never lies.

The body exhibits formation. It should always vibrate in harmony, with childlike joy and delight.

Let's not forget that the body never lies. Everything you perceive is nothing but the image your organs project.

Your organs are not only the closest parts of you to the world, they are the true founder, creator and maker of the world.

The body is the real dreamer. The body is the true maker of the personal world."

1-Individual Differences:

Some people's natural behaviors are reassuring, while others don't. This does not mean that someone is lying to you.

For example, introverted or anti-social people tend to appear to be

lying even though they are not.

In this case, the way to distinguish whether people are lying or not is to make some comparisons.

It is possible to illuminate mistakes when compared with true statements.

Even walking with the same step is a positive mirroring sign (Wilson, 2012)

2-Micro-Statements on Lies:

People who are adept at catching lies can often tell lies from small facial expressions. The problem is that these expressions are very difficult to detect because they are so small.

Research results obtained from three different experiments published in 2012 by Richard Wiseman, Caroline Watt, Leanne ten Brinken, Stephen Porter, Sara-Louise Couper and Calum Rankin reveal that there is no difference between the eye movements of people who lie and people who are honest. However, the number of blinks increases for those who lie.

During an argument, the person who looks straight into the eyes of the other person at first, when he realizes that he is going to lose, usually turns his gaze towards the nose / mouth.

In the squinting of the eyes, there is a sign of doubt, which includes expectation of an answer.

The relaxation of the eyes indicates that you have found your answer. If the eyes are hidden and shifted to the side or the gaze is averted, it is understood that there is a feeling of shame or guilt.

The nerve that runs the facial muscles is linked to the brain regions responsible for processing emotions. For this reason, facial expression is in a sense a mirror of the emotional world of the person - and of course, of the liars, albeit indirectly.

Another phenomenon is that when a person with half his face is paralyzed, when he is asked to smile without presenting something ridiculous, only the movable side of his mouth rises.

But when that same person laughs at something he or she finds genuinely funny while watching TV, their whole mouth can get in on the action.

3-Sound Can Be an Important Signal:

There is evidence that lies can be easily detected by the tone of voice alone. However, tone of voice can be misleading. It is easy to control one's voice, but not so easy to control their eyes.

Nonverbal communication includes forms of transmission expressed through gestures, facial expressions or other non-linguistic signs, other than spoken language.

An important part of daily communication is based on nonverbal communication.

All people use their voices when speaking, but in addition to this, some of our organs such as our face, hands and arms play an active role in mutual communication.

 For example;

We increase the effect of speech by making gestures and movements with hands and arms.

We shake our heads for agreement.

We pay attention to facial expressions to measure the perceptions or reactions of the people addressed.

We use sign language in situations where verbal communication is not possible (noisy environments, underwater sports, air and sea transportation, etc.).

Timothy Levine of the University of Alabama in the USA says that lying provokes some strong emotions such as excitement and guilt, and it is difficult to contain these emotions.

Levine claims that even when we think our faces don't reveal anything, certain "Micro Expressions" that develop against our will betray us. (Egyptian. İ, 2013)

4.7. GESTURES

4.7.1. GESTURE OF EXCITING:

The eyes close and open for a moment, the eyelids drop, the head shakes slightly, the body trembles, trembles, then relaxes from the exhaustion of excitement.

The fingers are stretched, contracted, and then the facial lines expand with the relaxation given by the comfort.

4.7.2. GESTURE OF ACTION:

Throwing, holding, carrying, throwing something in hand, any exercise, no exertion, eating, lying down, commuting, all movements.

4.7.3. GESTURE OF IMMERSE:
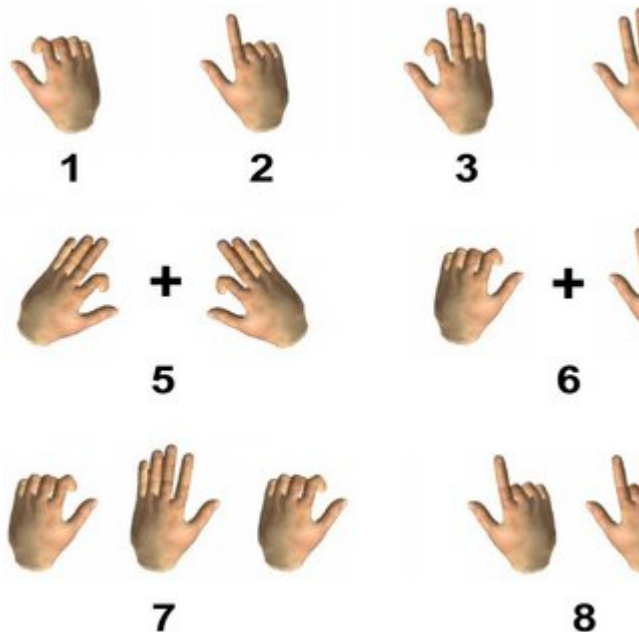
Shaking your head is like swimming without water.

Figure 5. Gesture Immerse

4.7.4. EMOTION GESTURE:

The eyebrows are raised, the eyes are enlarged, the mouth is slightly opened, the corners of the lips are slightly curved upwards. In the moment of anger, the eyebrows are furrowed, a deep line appears between the eyebrows, the nostrils are opened, the eyes are like lightning, the lips are parted, the lower teeth appear before the upper teeth, the whole face has an animal appearance.

4.7.5. SIGN GESTURE:

Head, arms and eyes turn towards the pointing. Turning the head or eyes in one direction is also a thoughtful gesture. You expect smiling people to talk about positive things that won't upset you. You expect sullen people to talk about negative things.

How convincing would it be for a sullen person to say nice and positive words? The messages given by the body are more realistic.

4.7.6. GESTURES MADE TO INDICATE LOCATION AND SITUATION:

For this, the pupils turn towards the real or imaginary thing or person. Head goes up, goes down, turns.

Often the index finger is also extended. The arm is stretched according to the length of the distance.

Two arms outstretched and separated from each other indicate two distant points and wide distance.

If the arms are further and further apart from the body with the elbows bent outward, it indicates things moving away from each other.

4.7.7. SIZE GESTURES:

To tell something very small, the tip of the index finger is touched with the thumb of the same hand.

In order to express something very big, the two arms are lifted up and extended from each other.

Narrowness is expressed by bringing the palms closer together, and width is expressed by moving them away.

If the hands are raised with the eyes, height is indicated, if the palms and gaze are directed towards the ground, depth is indicated.

4.7.8. SHAPED GESTURES:

If the palm is facing horizontally, it tells what is flat. To indicate a round shape, both hands draw a circle.

The gestures of the hand are crooked lines to describe sinuous, crooked things.

Gestures that indicate movement:

It indicates the weight if short up and down movements are made with the palm facing down and slightly concave.

If the hand is swung outward from the level of the chest with the palm facing down, it indicates quickness.

Keeping the shoulders back means being in control and alert for both men and women. The tense shoulders, which are thought of as a kind of expression of anger, are also seen as an expression of power.

As with the eyebrows, raising and lowering the shoulders slowly can be perceived as a sign of desperation. (Hartley and Karinch, 2007:

98)

4.7.9. NUMBERING JESTS:
The index finger is shown as one, the index and middle fingers are two, and the number three is shown by adding the ring finger.

The number is also explained by closing the fingers of the open hand with the index finger of the other hand.

General gestures are mentioned here. Gestures vary according to various people in the society.

4.9. EMOTIONAL JESTS:
Various thoughts and feelings that occur in our selves help mimics with different symptoms in our face and body.

Thus, expression gains strength with hand, arm and body movements that occur in parallel with the emotions in the face and other parts of the body.

Let's examine the main gestures that appear in all parts of our body and express our emotions.

4.9.1. EYES:
If the eyes are half-closed, detailism, skepticism, contempt, and if the eyelids are lowered, respect and embarrassment are expressed.

Wide opening of the eyes is a sign of surprise, anger, astonishment, and horror.

4.9.2. MUSCLES:
If the eyebrows are furrowed, it can indicate deep thought, a firm will. It is an expression of suffering that the beginning parts of the eyebrows rise up and the ends of the eyebrows go down.

4.9.2. MOUTH:
Half open stance of the lips can express astonishment and joy, and wide openness can express surprise.

The lowering of the lip corners indicates sadness, and the contraction of the lips first indicates silence, sulking.

The just protrusion of the lower jaw can indicate ferocity, the grinding of the teeth, a frenzied fury.

4.9.3. HEAD:

Tilting the head forward is curiosity, pulling back is disrespectful, fear, tilting slightly to the side is indifference, pity; Leaning forward may indicate shame and fear.

Nodding the head means validation, raising it from front to back means persuasion.

4.9.4. ARM:

Any of the arms "come!" or "go!" It is quickly moved forward to give the command. The wound shown is bent towards to show the location.

One or both arms are raised upwards to indicate intense feelings of admiration.

In the face of a discouraging situation, he is left to the side hopelessly.

In anticipation and defiance, arms are folded forward.

4.9.5. HANDS:

The palm of the hand is pressed on the heart, expressing love and excitement. If the palm is pressed in the middle of the chest, it can indicate the feelings of believing, believing.

Pushing the palm outward indicates disgust, disgust. Meanwhile, the head is also slightly bent backwards. Rubbing one palm over the other is a sign of joy.

4.9.6. FINGERS:

The index finger plays a very important role in hand gestures.

If the index finger is extended forward with the arm, it gives the meaning of pointing or running.

If the index finger is bent and pulled towards the chest, approaching, calling; Again, if the index finger is brought straight to the mouth, it indicates trying to silence it.

If the middle finger hits the thumb and clicks, impatience is expressed, if all fingers are closed, strength and determination, and if a fist is shown, threat is expressed.

If the index finger is rubbed against the thumb with the fingers

bent, a money sign is made. If the hands are joined and the fingers are intertwined, it means begging.

4.9.7. LEGS:

The posture of the legs is also very important.

Standing in front with one of the legs separated from the other indicates strong agility and violent emotions.

Having the feet aligned with each other indicates comfort, carelessness, defiance, or stagnation.

Frequent swaying of one leg while sitting cross-legged is a sign of impatience.

4.10 BODY

Although body language signs seem generalizable, they are personal and need to be interpreted according to the situation in the process.

For example, if the weather is hot, of course, people will tend to itch more or play with their collar-hair.

However, in general, shrinkage of the body, hunching of the back, gluing of the arms to the body; It is a sign of anger and embarrassment. Contrary to this, it tells about admiration and victory. In disgust, the body is backwards; It goes forward in desire, curiosity, impulsiveness.

Sitting on the side or backwards indicates moral weakness and physical inadequacy.

Robots that learn body language with artificial intelligence will now enter our lives. "I'm fine, I'm fine." If a friend of yours is clenching his fists contrary to what he says, we understand how angry he really is. This is called "body language" for short.

Body movements and facial expressions actually reflect our mood. What if artificial intelligence now analyzes this perception event and teaches it to robots... Body language means a lot, but despite the advances in vision and face recognition technology, robots had difficulties in recognizing subtle body movements.

Yaser SHEIKH, a lecturer at Carnegie Mellon University, has developed a body tracking system that can help solve this problem.

The system, called OpenPose, can monitor body movements,

including hands and face, in real time. It uses computers, vision and machine learning (i.e. camera and Algorithm) to process video frames.

This system has been developed and made it possible to monitor more than one person at the same time.

This new technology could facilitate human-robot interactions and pave the way for more interactive virtual and augmented reality and intuitive user interfaces.[36]
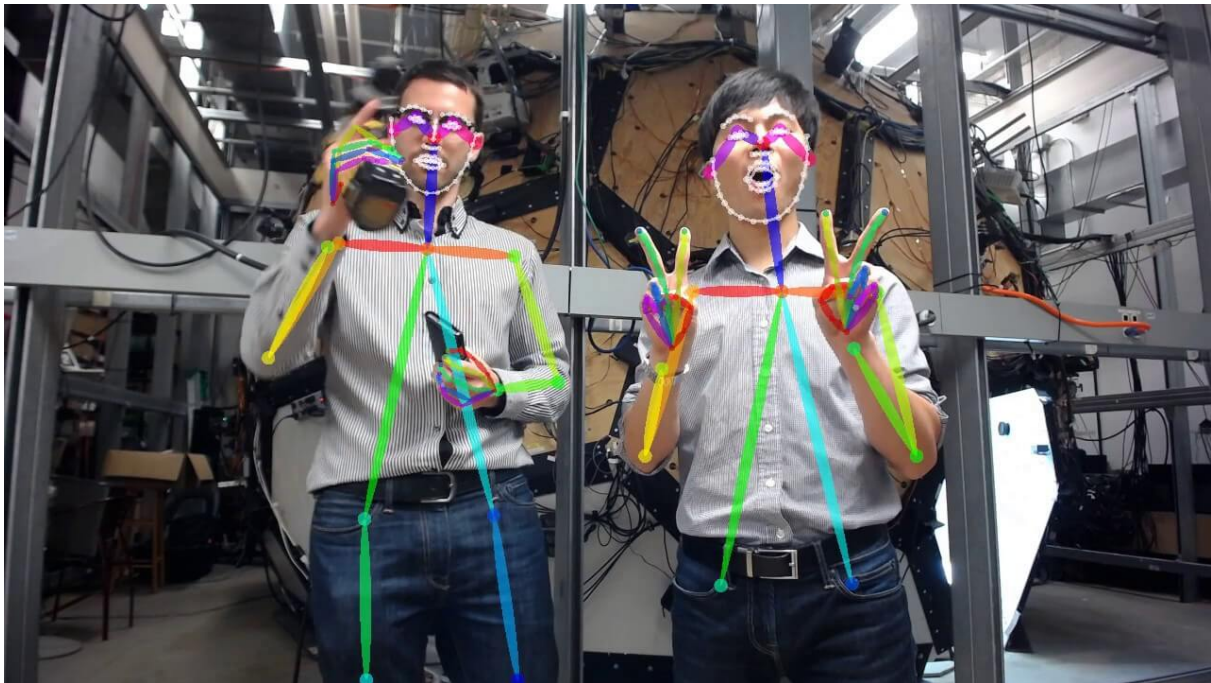

Figure 6. Computer Reads Body Language.[37]

Leaning forward is a sign of respect. There is a deep sense of respect when the performer bows down and as long as possible to greet the audience.

Our examination of the gesture is not sufficient to qualify it. Because, as we have repeated many times, the gestures related to these emotions should be lively, clear and specific, just as we search for the most vivid and appropriate words for the full expression of emotions. So the gesture must have some kind of soul.

Stereotypical hand, arm, face and body movements cannot be called gestures. By working on yourself and examining the hand, arm,

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[36] A Computer That Reads Body Language Real-Time Detector Sees Hand Poses and Tracks Multiple People/ Researchers at Carnegie Mellon University's Robotics Institute/ Yaser Sheikh
[37] http://www.cs.cmu.edu/news/computer-reads-body-language

face, and body movements of others, you can find useful truths in your art.

For example; just as the stretch of a hand can describe stinginess, the various degrees of gleaming in the eyes can also describe other emotions.

In excited, overflowing moments, the brightness in the eyes seems to flare up.

Gestures and mimics change in parallel with emotions. Gestures are also heavy or quick, depending on the weight or severity of the emotions.

It is even possible to predict a person's place in society, his character, habits, level of thought, and manners by looking at his gestures, mimics and attitudes.

Gestures and facial expressions sometimes appear on purpose, sometimes spontaneously, and sometimes as unwanted movements. However, there is a subconscious reason and purpose in all of them.

The message given by our mimics, in other words by facial expression, is more effective and meaningful than the message given by the other part of the body.

Postures are considered among the most reliable and honest nonverbal cues as they are typically assumed unconsciously (Richmond & McCroskey, 1995)

4.11. SITTING

The discomfort and uneasiness felt when lying causes the person to change his position, especially when sitting, and to change his position by moving forward-backward or right-left in his seat.

Behind this change of position is probably the feeling of "I wish I was somewhere else". Body movements that increase while sitting are frequently seen in panel, panel or talk-type programs on television.

Especially in the "Red Armchair" program, many guests make movements that push the limits of the seat and make mini trips on the sofa in questions that put them in a difficult situation.

Looking at people's posture is one of the ways we can assess their feelings and intentions. An important part of the art of reading body language is reviewing the other person's movements and evaluating

their posture. (Wilson, 2012)

4.12. EXAMPLES OF FACE SYMMETRY

A group of researchers from the University of Edinburgh investigated the causes of time reactions using measurements of facial symmetry of 216 men and women registered since 1932.

The results showed a strong correlation between facial symmetry and the effect of aging on mental processes, only in men.

Experts attribute the reason why such a situation is not seen in women, genetic differences or the fact that women live an average of 4 years longer than men.

In both sexes, mental functions decline rapidly, especially 4 years before death. Facial symmetry reveals diseases, toxins, nutritional problems and even harmful genetic mutations. This can be seen as a reflection of the consistency in men.

Conducting research at the university, Dr. "The link between facial symmetry and mental health may be useful in predicting problems in later life," said Lars Penke.

4.13. BODY LANGUAGE ANALYSIS

A study by scientists from Northwestern University in Chicago, involving 8,750 menopausal women aged 65-79 years, showed that those with larger hips had worse memory test results.

It has been determined that short-legged people have a higher risk of developing type 2 diabetes.

Research by scientists from the University of Bristol showed that for every 4.3 centimeter increase in leg length, the risk of diabetes decreases by 19 percent.

A study carried out jointly by Finnish, Swedish and Taiwanese scientists on 700 volunteer participants shows that each individual's body, regardless of language, religion, color or education, reacts to the emotions experienced in the same way, affecting certain parts of their bodies.

When you look at this "emotion atlas", you will see that the areas with loss of sensation are marked with shades of blue, and the areas

with augmentation are marked with yellow-red colors.

As predicted, happiness is the only emotion that a person feels from head to toe. One of the universities that has focused on research on the subject in recent years is Harvard.

Especially dermatologists, looking at the results of statistical research in their departments, argue that many skin diseases, including infections, occur after psychological depressions.

"The blush on the face when embarrassed is the smallest example that shows the changes that appear on the skin with emotions. We dermatologists now try to understand the psychological state of the patient by talking to the patient before examining the skin. Unfortunately, we realized this fact too late." they say.

The neurological aspect of body language is a new milestone in neuroscience studies. In 1996, Italian researchers Giacomo Rizzolatti and Vittorio Gallese at Parm University identified previously undiscovered brain cells called 'mirror neurons'.

Mirror neurons, first discovered in monkeys and later in humans, are a type of motor neuron and are nerve cells that control muscles and, consequently, body movements.

The human brain has multiple mirror neuron systems that specialize in realizing and understanding not only the actions of others, but their intentions, the social meanings of their behavior, and their emotions. (Blakeslee, 1996: 1)

Most of the bodily movements that arise out of people's biological needs form instinctive body language. Behaviors such as stretching in times of fear, laughing when pleased, turning to the mother's breast to feed the newborn baby, throwing his head back when afraid are common traits inherited from human genes.

However, some changes are seen in body language through environment, culture and learning. We call this type of behavior that occurs later and is acquired through learning, "Acquired Body Language".

You expect smiling people to talk about positive things that won't upset you. You expect sullen people to talk about negative things. How convincing would it be for a sullen person to say nice and positive words? The messages given by the body are more realistic.[38]

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[38] MEB BÜRO YÖNETİMİ / BEDEN DİLİ MODÜLÜ

Nonverbal cues	Affective Behaviors							Tech.		
	emotion	Personality	status	dominance	persuasion	regulation	rapport	Speech analysis	Computer vision	biometry
Physical appearance										
Height			✓	✓					✓	✓
Attractiveness		✓	✓	✓	✓		✓		✓	✓
Body shape		✓		✓					✓	✓
Gesture and posture										
Hand gestures	✓	✓			✓	✓	✓		✓	✓
Posture	✓	✓	✓	✓	✓	✓	✓			
Walking		✓	✓	✓						
Face and eye behavior										
Facial expressions	✓	✓	✓	✓	✓	✓	✓		✓	✓
Gaze behavior	✓	✓	✓	✓	✓	✓	✓		✓	
Focus of attention	✓	✓	✓	✓	✓	✓	✓		✓	
Vocal behavior										
Prosody	✓	✓		✓	✓		✓	✓		
Turn taking	✓	✓	✓	✓		✓	✓	✓		
Vocal outbursts	✓	✓		✓	✓	✓	✓	✓		
Silence	✓		✓				✓	✓		
Space and environment										
Distance	✓	✓	✓		✓		✓		✓	
Seating arrangement				✓	✓		✓		✓	

This table shows the most common nonverbal behavioral cues for each code and the affective aspects most commonly related to them. The table has been published in Vinciarelli et al. 2009 and it is courtesy of A.Vinciarelli, M.Pantic and H.Bourlard.

Chapter 5

5.1. MOVEMENTS KINESIC BEHAVIOR

5.1.1. Emblems:

It is non-verbal behavior that replaces words that gives us a shortcut to communicate simple ideas. Thumb - the gesture of the air, waving, the gesture of putting the finger to the lips to say shut up, are emblems that replace a single word or an expression. (Urhan Torun, 2018: 118-119).

5.1.2. Descriptors:

Small gestures and postures used to emphasize or punctuate ideas.

These are gestures or actions that "show" a verbal message. When we make a mistake, we hit ourselves on the head; holding our hands up in uncertain or contradictory situations; The way we point forward when we say "let's go", these are all descriptive body language expressions.

We use descriptors without planning, and most of the time we are not even aware we are using them. (Urhan Torun, 2018: 118-119).

5.1.3. Reactors:

The face that conveys emotions, sometimes supported by body postures. Raising our eyebrows when we're surprised and 'gripping our faces' when we're disgusted are a sign of reaction. It is important to have information about the current situation or to know the sender of the message in terms of interpreting the reaction demonstrators.

For example; In a scientific experiment in which participants were shown ten different emotions, overall only half of these ten emotions could be identified. Like descriptors, we unconsciously use reaction pointers.

For example; While talking to someone on the phone, we exhibit these behaviors even though the other person does not see us.

There is also evidence to suggest that basic response demonstrators such as smiling and pouting are universal across cultures.

5.1.4. Editors:

Eye movements, nodding, and postures regulate speech. We often nod, smile, or make noises like "hmm-hmm" to show we understand or just show we're listening.

Other modifiers, such as shaking the head or squinting, show disagreement. Vocal movements and gestures that indicate whose turn it is in conversation are other common modifiers.

Regulators can also indicate boredom. Breaking eye contact or changing posture indicates a lack of interest. It is also important that regulators are interpreted in context. Someone with their legs bouncing may be bored, but if they're listening to music, it could be a sign that they're having fun.

5.1.5. Adapters:

They are actions that help us to suppress or relieve our physical or emotional tension when we are anxious. Adapters are behaviors such as snapping fingers, curling hair, or gnawing nails.

Each emotion, like a different electrical current, causes the secretion of chemicals such as adrenaline and endorphins, which we call neuropeptides (NP), in our nervous system.

Each NP triggers the body to respond differently. For example, even the smallest happiness causes the release of endorphins, and endorphins cause to keep the immune system strong, relax muscles, feel peace and relieve pain.

When you experience anxiety or stress, adrenaline and cortisol released cause muscle spasm, shortness of breath and inflammation (without any infectious agent) according to the latest scientific findings, no matter how well you eat or do sports.

In some cases these behaviors are for relaxation, but most of the time they are habitual. Someone who exhibits these behaviors is always seen as a nervous person from the outside, even if they are doing it out

of habit. It's important to avoid false assumptions when trying to understand body language because context is so important. (Ryan & Schrank, 2008: 2)

For example, covering the mouth by the hand takes various forms. The fingers may snare over the lips, the index finger may rest on the upper lip, or the hand may rest just near the mouth.

Children cover their mouths with their hands while lying. Undoubtedly, for adults, the hand to mouth is not the only decisive gesture when it comes to lying.

If the person is hesitant about what he is saying, is afraid of making mistakes, wants to save time, his hand may be around his mouth. For this reason, moving the hand to the nose is a more developed, subtle and isolated movement compared to covering the mouth. The hand that comes to cover the mouth reaches the nose just above, thus making a more symbolic and stylized move.

Many physiological changes occur in the body of a person who experiences an inner tension while lying. In addition to the physiological changes recorded while lying, such as increased blood pressure, increased heart rate, increased sweat gland activity, an itchy nose is usually experienced.

Jeremy Bailenson (Associate Professor in the Department of Communications) and Andrea Stevenson Won, (Stanford Virtual Human Interaction Laboratory (VHIL)) conducted a study/research on nonverbal behavior cues in the modern age.

The researchers collected data using the most common video cameras, called VHILs, to measure the precise movements of the participants' organs, legs, and heads.

Students whose upper body is in very extreme movements tend to learn worse than others.

It has been determined by previous scientific studies that sad people walk by lowering their shoulders, while happy people walk by springing forward.

A study conducted at the Canadian Institute of Advanced Studies (CIFAR) revealed a different side of this situation, namely that the mood of people is reflected in their walking, and the way they walk also affects their mood.

It was reported that the result of the study may contribute to the

development of new curative approaches in the treatment of patients with depression.

The profile techniques applied today can be successfully applied in almost every field and place where we are faced with the human factor.

Especially in law-criminology and security, personnel selection in human resources, management, evaluation; sales, interviews and presentations in business communication, career management and merit issues; It is very useful in dealing with difficult people, in public and mass communication, training and consultancy activities.

Jeremy Bailenson (Associate Professor in the Department of Communications) and AndreaStevensonWon, (Stanford Virtual Human Interaction Laboratory (VHIL)) conducted a study/research on nonverbal behavior cues in the modern age.

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Conclusion: Students with very extreme upper body movements tend to learn worse than others.

5.2. MOTION CATEGORIES

Laban motion analysis is currently classified in various ways. Initially, these categories were very basic, and Laban himself referred most to the effort studies, Eukinetics, and the Spatial Coherence theory, Choreutics.

According to Laban, the different positions of the body are the visual twenty-eighths called the kinesphere.

includes face. Kinsesphere, which is defined as the space surrounding the dancer and which the dancer can scan, is expressed as the three-dimensional geometry formed by the movement and outer limits of the body (Spurr, 2007),

His student Irmgard Bartenieff later further developed these categories into four - Body, Effort, Shape and Space - and this system, known as BESS, is widely taught today.

However, BESS is not the only organization of Laban's theory in use. In the United Kingdom, for example, the categories most influenced by Lisa Ullmann, another of Laban's students, were intertwined with Body,

Effort, Relation to Space and Form, Body, Space and Relation.

The categories of BESS are as follows:
The body - what the body does and the interrelationships within the body
Effort - qualities of movement
Shape - how the body changes shape and what motivates it to do so
Space - where the body moves and harmonic relationships in space
Human body movements can be analyzed using the Laban Motion Analysis theory. Space usage scanning can be done. Relationships between s

AI analyzes body language with the Laban theory of movement analysis.

Other categories that are occasionally mentioned in some literature are relationships and expressions. These are less well defined. Relationship is the interaction between people, body parts, or between a person and an object. Expression is defined as the personal expression of an act.

Everyone's speaking and walking speed is different. When we see someone coming from the opposite side, we first judge them by their appearance and body language. The impression of a person approaching with slow steps and a person coming with fast, running steps will undoubtedly be different.

Another problem we have is social learning;

Social learning takes place in four main categories. Copying: One-to-one copies the actions or behavior results of others who are observers.

Facilitative learning: A social creature learns how to use environmental conditions or objects by observing other living things.

Observational conditioning: The behavior of another creature enables the learning organism to recognize a previously unknown relationship with a stimulant factor and to shape its own behavior.

Increase: The learning creature sees the focus on certain objects or locations from others and begins to apply the same focus in its own life.

Researchers state that 'dark matter', or social interaction, is essential for artificial intelligence to approach human intelligence.

In one of his recent tweets, Elon Musk emphasized that Tesla

robots can reach the level of AGI (artificial general intelligence) in the future. Stating that Tesla cars constantly interact with the outside, Musk stated that the recently introduced Tesla Optimus android robot will support this power with social interaction.[39]

Chapter 6

This chapter outlines some of the most salient aspects of such a potentially new domain and outlines some of its most important perspectives for the future.

6.1. KINECT SENSORS

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[39] Yapay Zekanın Kara Maddesi Keşfedildi / Hürriyet /Umut Fırat Eroğlu
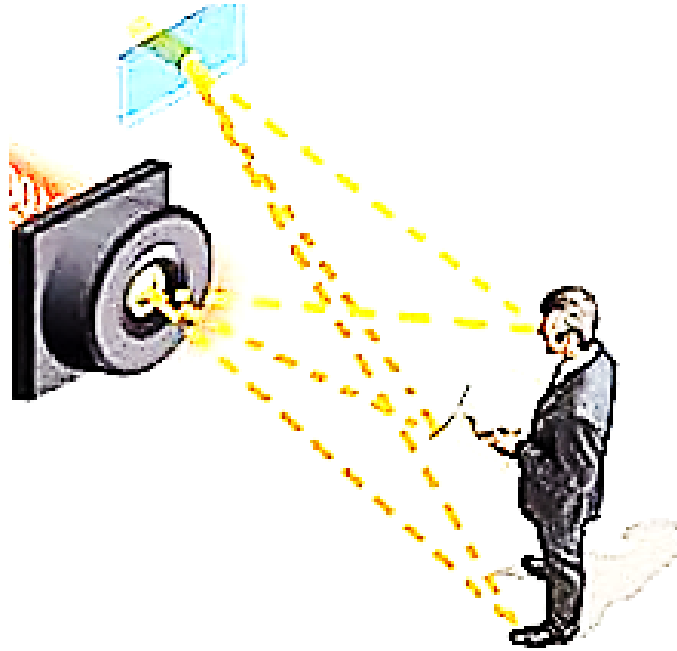
Figure 8. Kinect Sensors

Figure 9. Kinnect Sensors[40]

Multimodal techniques to save

Emotional databases can be divided in three categories, taking

[40] https://www.trueachievements.com/n29220/kinect-share-disabled-takes-many-achievements-with-it

into account their source: spontaneous, invoked and acted or simulated emotions.

Multimodal techniques have recently become a focus in affect (emotion) recognition research.

Kinect technology has been used in the identification of emotions during multimodal analysis.[41] The Kinect sensor incorporates several detection components; and it contains a depth sensor, a color camera, and a matrix of four microphones that provide the entire body with 3D motion capture, facial recognition, and speech recognition capabilities.

The validity of Kinect has been proved in the studies of gesture and motion recognition. Kondori et al. (2011)
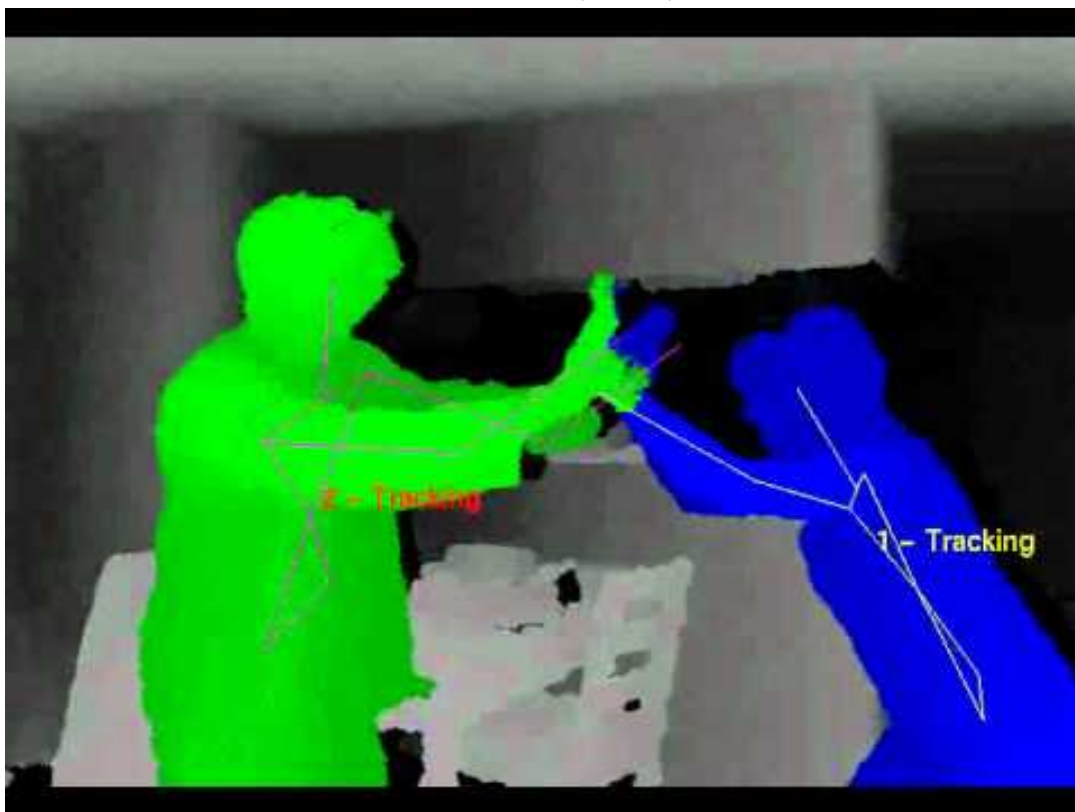
Figure 10. Kinect Open Id[42]

Syntactic model-based human body 3D reconstruction and event

[41] Grafsgaard, J.F., Fulton, R.M., Boyer, K.E., Wiebe, E.N. and Lester, J.C., Multimodal analysis of the implicit affective channel in computer-mediated textual communication, Proc. 14th ACM Int. Conf. Multimodal Interact., pp. 145-152, 2012. DOI: 10.1145/2388676.2388708

[42] https://www.youtube.com/watch?v=1L38787ScB4

classification via association based features mining and deep learning.

6.2. AI AND FACE

Faces provide a rich source of information, with exposure of just milliseconds sufficient to make implicit inferences about individual traits such as trustworthiness.

AIs can analyze faces from video streams (recorded and live), cameras, or online/offline databases, encode the faces in proprietary image descriptors and match an individual with various personality traits and types with a high level of accuracy.

These classifiers represent a certain persona, with a unique personality type, a collection of personality traits or behaviors. Our algorithms can score an individual according to their fit to these classifiers.

Figure 11. AI and Face[43]

Emotion Detection Algorithm

Facial Image

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[43] www.facetroloji.com

▼	
Face region extraction	Image processing
▼	
Facial component extraction	
▼	
Feature extraction	
▼	
Emotion detection via fuzzy classifier	
▼	
Estimated emotion	

Table 8. Overall procedure of emotion detection algorithm.

6.3. SKELETON-BASED RELATIONAL MODELING FOR ACTION RECOGNITION

Human skeleton capture systems, skeleton-based action recognition has attracted much attention recently. Most existing methods use Convolutional Neural Network(CNN) and Recurrent Neural Network(RNN) to extract spatio-temporal information embedded in the skeleton sequences for action recognition.

Figure 12. Examples Of Actors Poses İn Basic Emotions Fear
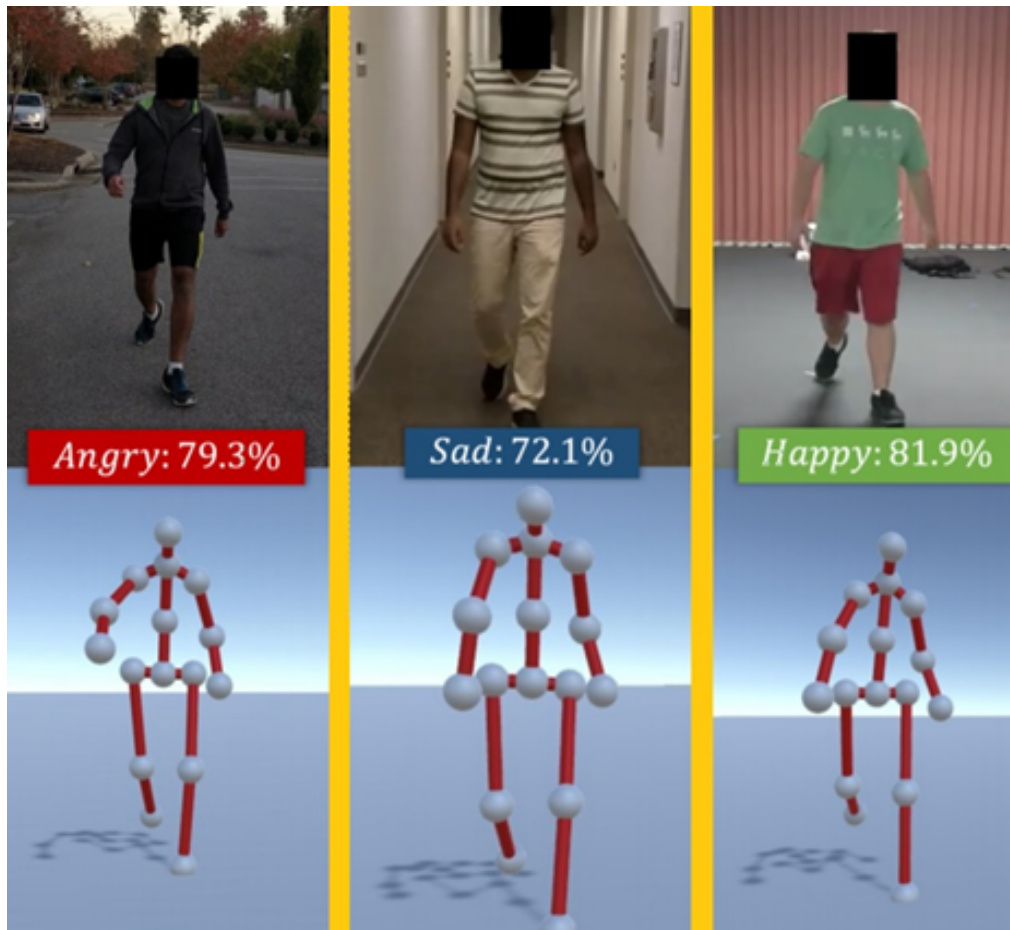
Figure 13. Skeleton Based Model[44]

The applied vector of characteristics can vary for classifications of more complex negative emotions, for example (+) rage, anger, annoyance, (-) apprehension, fear, terror). This means that it would be necessary to identify additional points of the skeleton, which would increase the complexity when recognizing emotions.

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[44] https://www.digitalinformationworld.com/2019/07/identifying-emotions-from-walking-using-affective-and-deep-features.html
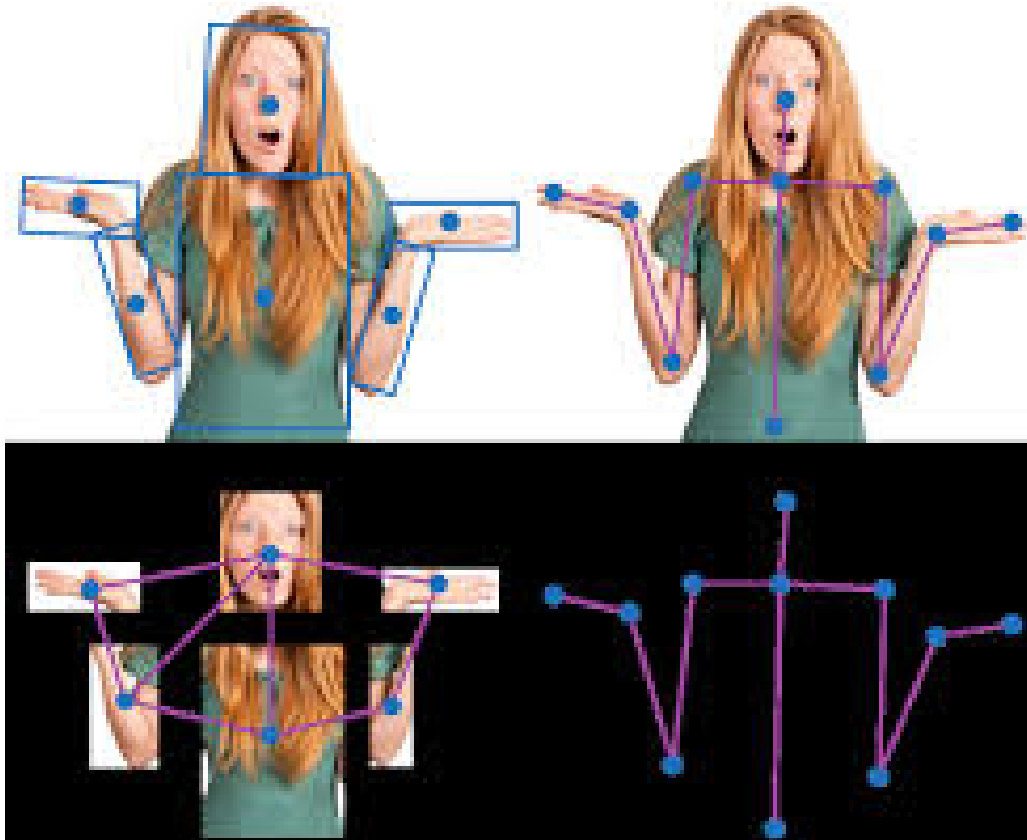
Figure 14. Skeleton Model[45]

A kinematic model (right) is a collections of interconnected joints with predefined degrees of freedom similar to the human skeleton.

(a) e^{χ_2}-HoG (b) Our (c) e^{χ_2}-HoG (d) Our
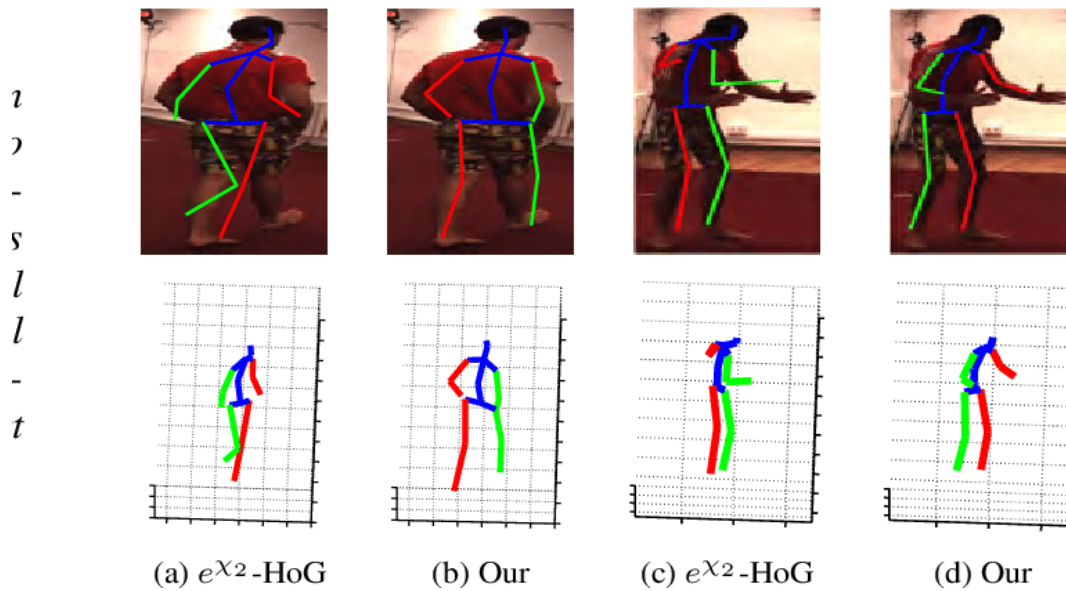
Figure 15. Skeleton Model[46]

The emotional state is represented using emoticons and a horizontal bar graph showing the confidence level of the detected emotion.

1.5. CONTOUR BASED MODEL

Four features are investigated in this approach such as Cartesian Coordinate Features (CCF), Fourier Descriptors Features (FDF), Centroid-Distance Features (CDF), and Chord-Length Features (CLF).
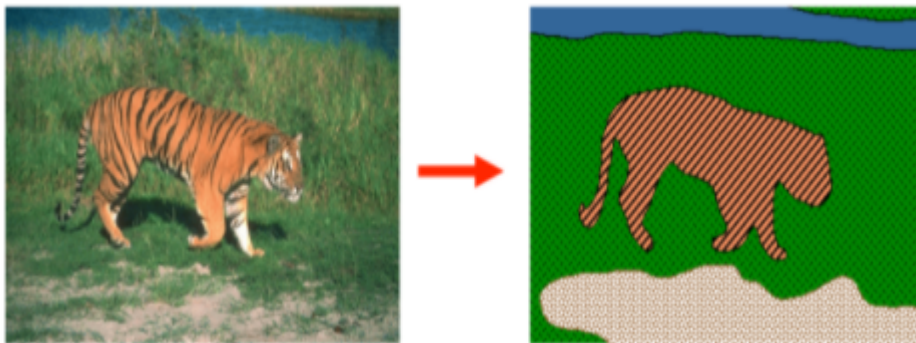
Figure 16. Contour Based Model[47]

1.6. VOLUME MODEL

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[46] https://www.researchgate.net/figure/3D-pose-estimation-in-the-Human36m-dataset-The-recovered-3D-skeletons-are-reprojected_fig3_275669274

[47] https://www.analyticsvidhya.com/blog/2021/09/active-contours-a-method-for-image-segmentation-in-computer-vision/
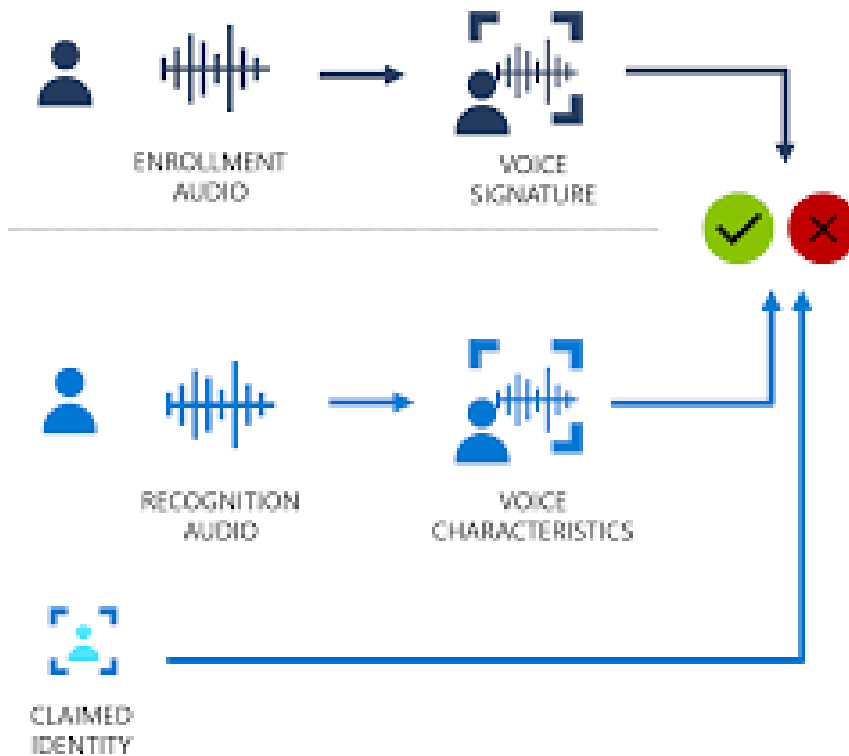
Figure 17. Volume[48]

Voice recognition is actively used in an array of ways: from improving customer service to combating crime, to name a few.

To better understand how this technology works, it would be helpful to touch upon its major types:

Front-end (user-dependent): the words are converted into a text in real time, obviating the need for a transcriptionist;

Back-end (user-independent): the words are recorded in a digital form and then processed by a computer, after which a draft text is proofread by an editor.

All methods are very useful and are a start in the way of artificial intelligence to describe human behavior.

But emotions are evoked by different mechanisms such as events, objects, other people or phenomena that lead to various consequences manifesting in our body

Such conditions are very difficult to reproduce in real-world applications and tools trained on such data usually do not generalize well to natural recordings made in unconstrained settings.

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[48] https://thinkbiganalytics.com/voice-recognition

Effective algorithms for recognizing naturally occurring micro-expressions which are robust to realistic situations with the capability to deal with pose changes, illumination variations and poor quality of videos, recorded in-the-wild environment must be developed.

There is a different way. An emotional recognition program that can analyze human-object, human-animal and human-human interaction and reactions on this path. Interactions drive our world.

Some of these challenges are quite small and can be easily addressed (noise or power outages).

Figure 18. New Model [49]

To examine more holistic data of artificial intelligence;
1- Sound/Voice
2- Heat/Termal
3- Image
4- Movement
5- Word Detector

6- Environment Sensor

7- Object Detector

8- Humidity

As well as being able to do this in a unified and fastest way.
If we can do this;

1- Artificial intelligence can literally read human emotions and behaviors.

2- If artificial intelligence can read human-object, human-animal, human-human effects and reactions with the holistic way, it can imitate them.

3- The role of artificial intelligence can no longer be a role. Human-artificial intelligence can produce action and reaction.
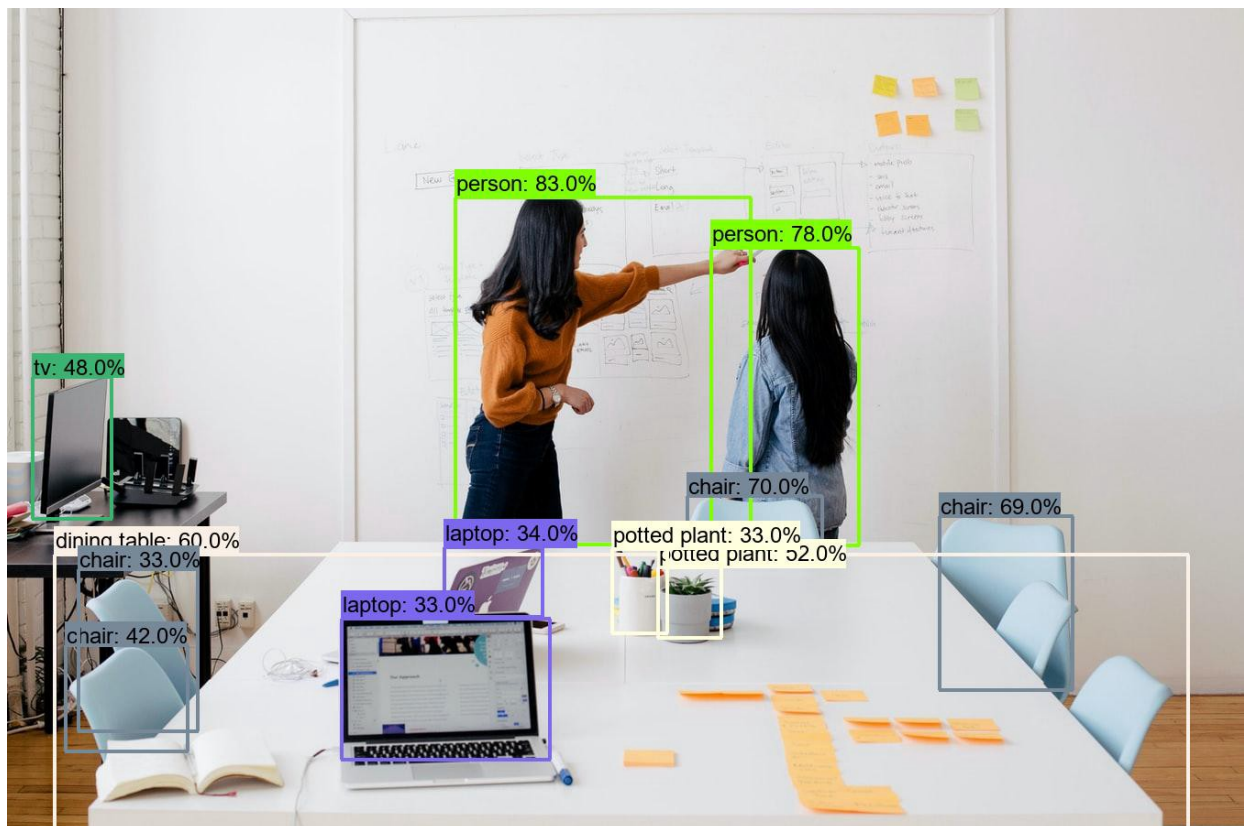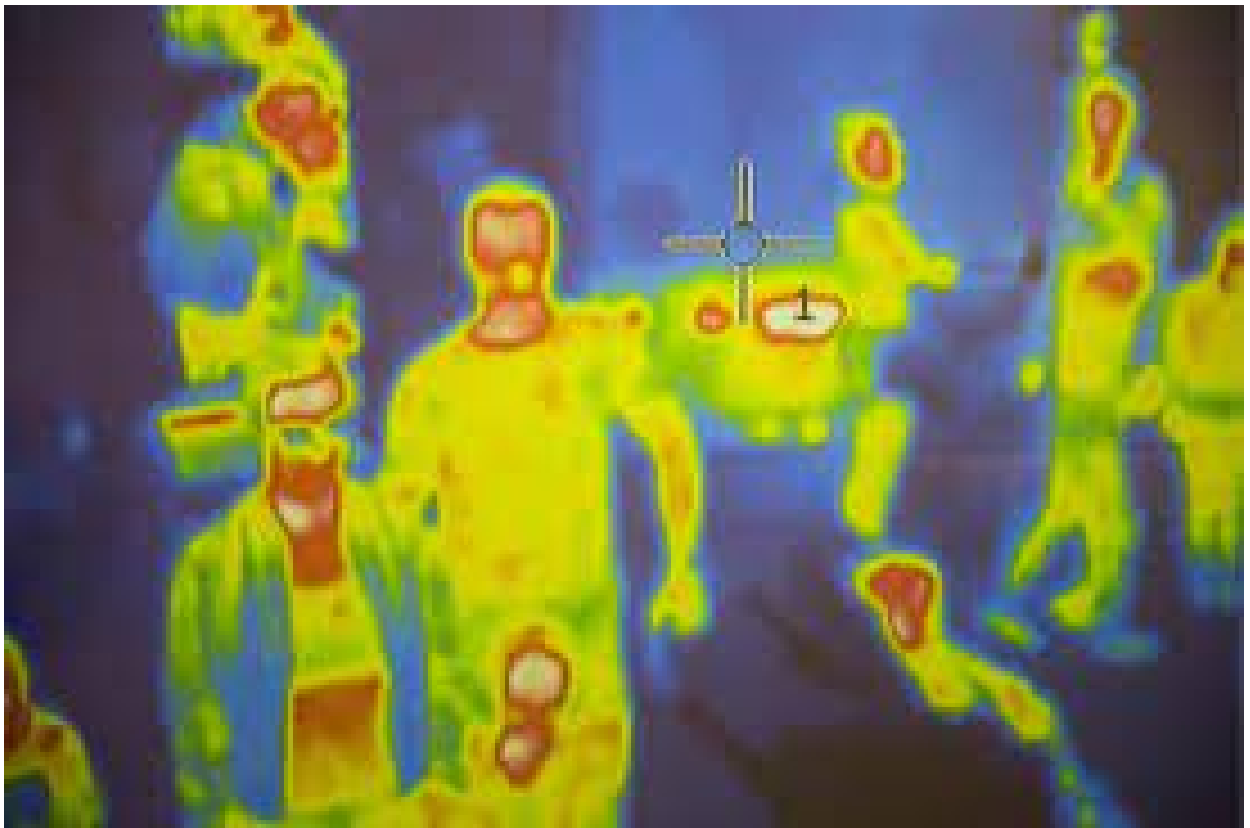

Figure 19. Object Dedector.[50]

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[50] https://towardsdatascience.com/why-is-object-detection-so-messy-6a91191579b8

Figure 20. Termal Sensor[51]

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[51] https://www.mouser.com/blog/thermal-sensor-measures-alerts-human-presence

Figure 21. Thermal imaging technology aims to help on the frontline and post lockdown[52]

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[52] https://www.smartcitiesworld.net/news/news/thermal-imaging-service-developed-to-protect-against-the-spread-of-coronavirus-5215
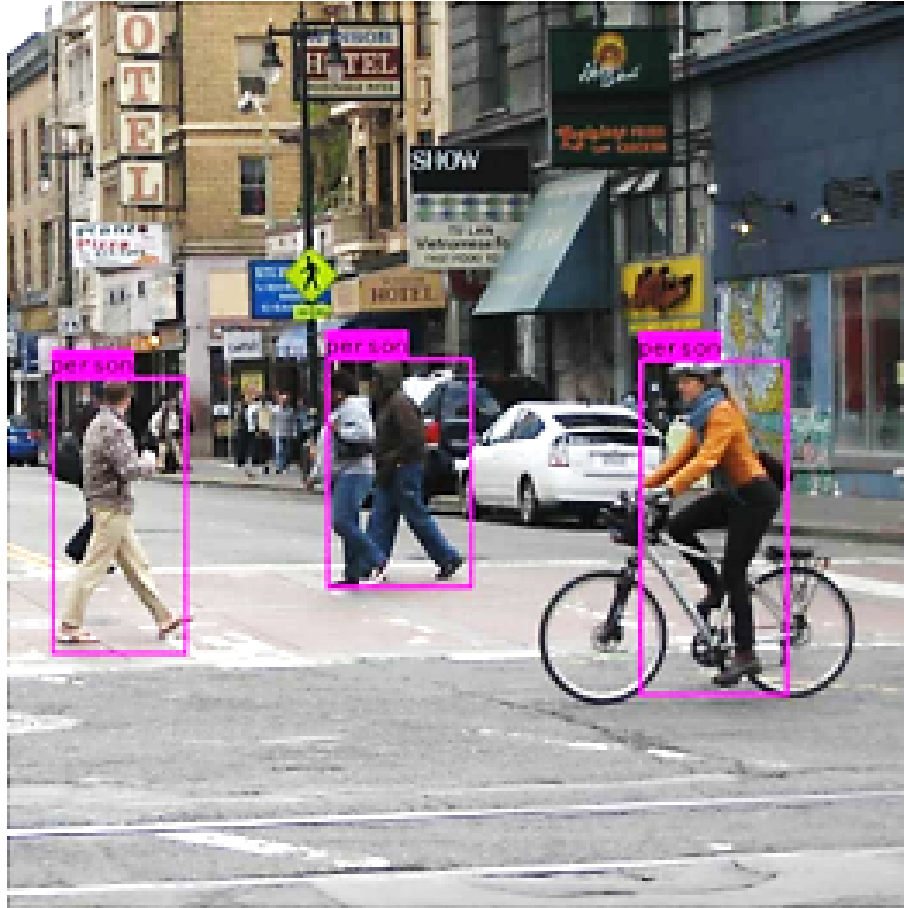
Figure 22. Human body detection effect display.[53]

However, the fusion of multiple depth cameras can increase the field of view and expand the range of the detection area. At present, scholars have carried out research on fusion system of multiple depth cameras.
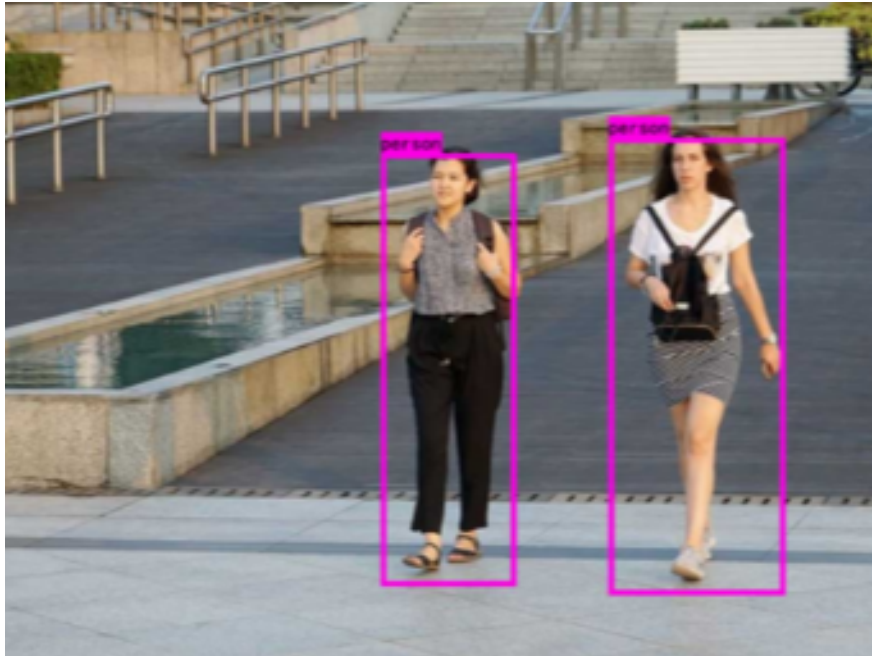
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[53] https://www.hindawi.com/journals/amp/2022/9170642/fig4/

Figure 23. Human body detection effect display.[54]

The integrated framework will enable novel research programs, such as, identifying which detection tasks better suit humans or computers, harmonizing the nonverbal features extracted by humans and computers and integrating human and artificial agents in hybrid systems.

Example

1.7. AFFORDANCES

Affordance is a term coined by psychologist James Gibson in 1977. It refers to the possibilities of utilisation of a product based on the physical capabilities of the user.

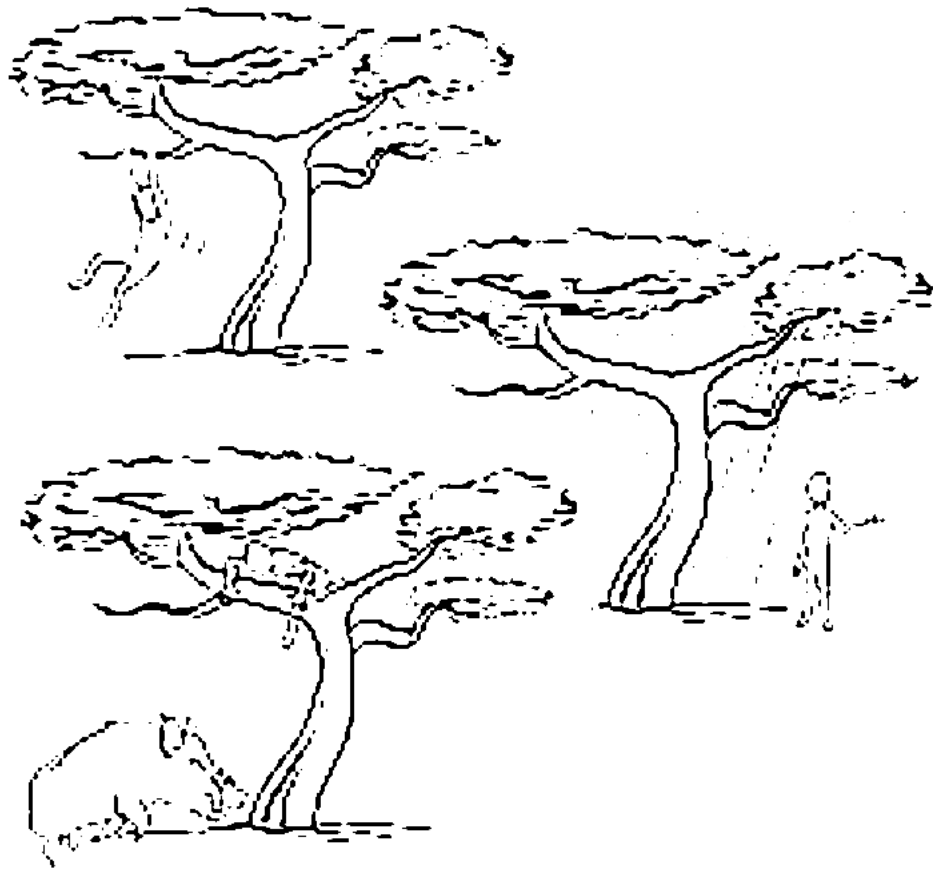[54] https://www.hindawi.com/journals/amp/2022/9170642/fig4/

Figure 24. Human-Object

Automatic affect recognition is a pattern recognition problem. This is another obstacle for artificial intelligence in understanding human emotions in human, object and living interaction.

For example, what would be the balance mechanism of an individual who does not have a foot? Artificial intelligence should know this too.

In this case, as the interaction of the human with the object differs, the emotional definition changes.

Emotions are inherently difficult to read and there is often a disconnect between what people say they feel and what they actually feel.

One single modality could be unreliable, as one certain behavior pattern could be just related to physiological uncomfort or personal

habit, but has nothing to do with emotional states.

So only when multiple cues are considered together we could achieve more reliable emotion recognition. There is very little investigation in this respect so far, and future micro-expression studies could consider combining multi-modality data for micro-expression and hidden emotion recognition.

1.8. SURVEY

In this study, I asked 1000 people between the ages of 20-55 through questionnaires. I preferred the digital environment for the survey work.

SURVEY SAMPLE:

NAME-SURNAME (OPTIONAL):
YOUR EDUCATIONAL LEVEL:
YOUR AGE:
TEL NO (OPTIONAL):
1-HIGHLY INCOMPETENCE   7-HIGHLY COMPETENCE
DO YOU THINK CAN ARTIFICIAL INTELLIGENCE UNDERSTAND EMOTIONS?
YES/NO
Please rate yourself from 1 to 7:
DO YOU THINK ARTIFICIAL INTELLIGENCE WILL BE DANGEROUS TO OUR SOCIETY?
YES/NO
Please rate yourself from 1 to 7:
HOW WOULD YOU FEEL ABOUT HAVING AN A.I. IMPLEMENTED INTO YOUR HOME OR DEVICES?
POSITIVE
NEGATIVE

SURVEY RESPONDENTS:

476 MEN
524 WOMEN

EDUCATIONAL LEVEL

242 Middle School
425 High School
289 University
44 Master/Doctorate Degree

SURVEY RESULT

*ONE DAY DO YOU THINK CAN ARTIFICIAL INTELLIGENCE UNDERSTAND EMOTIONS?

MEN: MODARATE COMPETENCE (AVERAGE 4)
WOMEN: COMPETENCE (AVERAGE 6)

ANSWER CHOICES	RESPONSES
Yes	69.22%
No	30.78%

*DO YOU THINK ARTIFICIAL INTELLIGENCE IS A THREAT TO HUMANITY?

MEN: COMPETENCE (AVERAGE 6)
WOMEN: SLIGHTLY COMPETENCE (AVERAGE 5)

ANSWER CHOICES	RESPONSES
Yes	76.20 %
No	23.80 %

*HOW WOULD YOU FEEL ABOUT HAVING AN A.I. IMPLEMENTED INTO YOUR HOME OR DEVICES?

| MEN: COMPETENCE (AVERAGE 6) |
| WOMEN: SLIGHTLY COMPETENCE (AVERAGE 5) |

ANSWER CHOICES ▼	RESPONSES
▼ Yes	71.33%
▼ No	68.67%

HOW DO YOU FEEL ABOUT THE IMPACT OF A.I. ON YOUR LIFESTYLE?

ANSWER CHOICES ▼	RESPONSES
▼ POSITIVE	44.80%
▼ NEGATIVE	55.20%

- The data in this study is limited to only 1000 people.
- Self-confidence approaches in the study, measured by the scales used limited to qualifications.
- Findings that emerged as a result of the study; to be used in the researc limited to the data obtained from data collection tools.
- The study has not been compared with other research methods.

Will it turn out to be more of a benefit to humankind or will it be a risk and threaten humanity as we know it?

If AI is programmed according to Isaac Asimov's 3 Laws of Robotics humans won't have a problem with machines but for some, malevolent AI is still a concern for a peaceful and safe life on earth.

This fear is understandable. Any technology that sparks a huge boom due to its considerable advantages often opens the door to new challenges.

The first reason is quite straight forward: the last time one group became more intelligent than another, it did not go well for the less intelligent group. Human beings have dominated the planet - not because of our size or strength, but because of our intelligence.

Second reason; Unless we make progress on this kind of research, we are likely to face significant -even existential- threats from misaligned AI. Therefore, the potential scale of AI's negative impact in these worst-

case scenarios is extremely large.

Here are two challenges we need to solve to ensure AI is beneficial for everyone:

The technical challenge: how can we make sure powerful AI systems do what we want them to?

The political challenge: how can we ensure the wealth created by AI is distributed fairly, and incentivise AI companies to build AI safely?

1.9.   CONTRIBUTIONS AND IMPLICATIONS OF THE STUDY

First of all, past research has examined the links between emotional recognition and AI focusing on individual level process.

In my thesis, the importance of emotional signals that can be obtained from nonverbal communication is stated and it is revealed that if we approach artificial intelligence like a teacher, artificial intelligence will reach a level that can understand these emotions.

After knowing that artificial intelligence defines these nonverbal communication signals, aspects that can be very useful for humans have been revealed.

In addition, a mini survey of a thousand people was conducted on whether artificial intelligence causes fear in people.

Human is a unique being. They cannot even fully describe people's own feelings. Emotions are not tangible either.

Artificial intelligence may be able to overcome this, too. It can tell us what we feel epistemologically. Artificial intelligence may one day even be a teacher of emotion.

Here are the weaknesses in my thesis. There's a difference between looking at emotion from a philosophical perspective and looking at it from a biological perspective, like hormones.

Like the subject of lies in my thesis, there are also differences between using it in the needs of daily life and processing a message in general.

Also, technology scares those who are first introduced to it or those who cannot use it. This creates a vicious circle for us.

Artificial intelligence will of course understand us one day. But will we be able to understand and use artificial intelligence? I focused on this question.

The other weak point is related to what communication is. When a person is making bodily responses as if he were afraid, he may actually be telling a story.

Many forms of figurative communication must be understood from a holistic perspective.

We live in a dangerous world, where terrorists and other criminals are easily mingle with the general population and easily travel between countries; the vast majority of them are unknown to the authorities.

As a result, it is becoming ever more challenging to detect suspected individuals in public places such as airports, train stations, government and public buildings, and border controls.

Current solutions mostly rely on facial recognition, detecting suspicious activity/ behavior and manual profiling. They are not sufficient to handle the scale of the growing threats. To achieve this capability, data mining should be used functionally.

I did not give any information about this data mining in my thesis. However, I think that cloud technologies should be used here.

My thesis also contains some philosophical propositions about the history, present and future of artificial intelligence and emotion readers.

1.10. CONCLUSION

The importance of investing in studies on understanding human in the world is increasing day by day.

It is not possible for us to know some of the consequences of an AI that can analyze written, verbal and nonverbal communication.

But there is one thing we are sure of:

AI will help us solve many problems that we still can't find a solution to, speed up the processes in question, and perhaps with an AI that understands emotions, patients will tell their symptoms to the artificial intelligence on the other end of the phone, using their cameras, they will show the places that artificial intelligence wants to see.

The artificial intelligence system will also be able to provide emotional support to patients until the doctor arrives or goes to the hospital.

Artificial intelligence will help diagnose psychiatric illness using data. He will be able to give the symptoms of the patient instantly and with details.

Students will do the lessons with artificial intelligence.

Artificial intelligence will be able to get to know the students very well, follow their learning status, and progress in the subjects at the

appropriate pace for the students. Education will be truly personalized.

Service industries based on research and offering options, such as travel agencies, will disappear. AI will do this kind of work.

Many of the jobs in the service industry will be done by artificial intelligence. For example, the food we desire will be put in front of us without the waiter.

As I have discussed in my work, ERs can be a very quick solution to the benefit of people who cannot read faces.

It can be beneficial for visually impaired individuals both in communication and walking.

Law enforcement officers, human resources specialists, estheticians can be assisted in their work. It may even undertake the duties of law enforcement officers such as traffic and public order in the future.

This information can be used in any field where people are.

Sales, interviews and presentations in business communication, career management and merit issues; It can be very beneficial in dealing with difficult people, in public and mass communication, training and consultancy activities.

And it can be developed very quickly by creating educational materials.

Future research may also focus on combining the impact of a well-rounded algorithm with a human.

Tools such as body language, facial expressions, tone of voice and speech, as well as non-contact physiological perception.

Vocal behavior accounts for all those phenomena that do not include language or verbal content in speech.

The vocal nonverbal behavior includes five major components: prosody, linguistic and non-linguistic vocalizations, silences, and turn-taking patterns (Richmond & McCroskey, 1995)

Detecting a range of available modes, assistive AIs with more knowledge can be made to accurately predict a user's current emotional state in social.

For example, a robot dog can help its owner by understanding his feelings.

As a result, AI can improve itself by using research results as data, as I have exemplified in my study, as well as develop experiments and research in social sciences at maximum speed.

As a suggestion, taking into account all the propositions that AI can lead us towards causes such as unemployment or a scenario such as the human apocalypse, we will provide services and work in the field, such as the fact that we can be a prosperous world country by allocating a high level of budget to the development of emotion reading and identification features of AI. individuals need to be trained, supported and rewarded.

Let's not forget that the value of any company in Silicon Valley can be as much as the value of millions of concrete companies.

There are some obstacles, right or wrong, good or bad, for this to happen. And if we overcome these obstacles in the right way, it is clear that a new social and psychological era will begin for human beings.

Moreover Human-artificial intelligence can produce action and reaction.

What if it was possible to know whether an anonymous individual is a potential terrorist, an aggressive person, or a potential criminal?

Better yet, what if that information could be obtained and used in real-time, when it matters the most?

In this study, which focuses on the relationship between artificial intelligence and media, it is necessary to carry out the studies, taking into account the harmful effects of human communication, as a similarity to the change experienced by mass media such as money and cinema throughout history.

"We have now accepted after 60 years of AI that the things we originally thought were easy, are actually very hard and what we thought was hard, like playing chess, is very easy" (Alan Winfield, Professor of robotics at UWE, Bristol)

The future belongs to those who believe that it will be beautiful.

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ADDITIVE RESOURCES

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