

# **Artificial Intelligence in Media: Radio Automation Systems as the First Artificial Intelligence Application in Media in the Terms of “Threats” and “Opportunities”\***

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## **Introduction**

In recent years, the technological developments in the computer sciences have been progressing almost at an uncatchable pace. Although the history of the idea of artificial intelligence goes back to the period before the computer sciences, its real development has been realized with the current technology. The artificial intelligence is to mimic the human ability to think, understand, learn, and interpret through programming.

When we look at the studies carried out on the artificial intelligence until today, we can see a remarkable development; however, it is obvious that it is still far behind the human intelligence. Since there is no application we can call “intelligent” yet, the question of whether the artificial intelligence is possible arises.

The questions such as “is the artificial intelligence possible?” and “can the machines think or even have consciousness?” have not been answered exactly yet. Along with these questions, the following questions also come to mind: “what is intelligence?” “what is artificial intelligence?”, “what is consciousness?”, “do the other creatures have consciousness?”, “is the consciousness required for having intelligence?”, “what is soul?” In order to exactly understand the

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artificial intelligence, first of all the answers to these questions should be sought. Because although the concept of artificial intelligence has been used for a long time and many applications are called artificial intelligence, the content of this concept is not exactly clarified yet. Thus, the mistake of defining the computer programs running only as per certain rules as 'intelligent' will also be abandoned.

The last century has witnessed significant breakthroughs in the computer technology. Thanks to the computers that can process very fast, very complex and time-consuming problems have become easy to solve. The jobs that the humans cannot do or do not want to do have started to be done by the computers, robots, and computer-controlled automated devices, which can carry out multiple complex function. Computers have very fast and error-free processing capacities, they can easily accomplish the jobs that the humans cannot do, and they gained the locomotion with the robotic designs. These capabilities have led to the comparison of computers with people at every opportunity.

In fact, this is not a new idea. It is known that even when the computers were yet in their infancy, the scientists who were conducting studies on this subject believed that computers would be as intelligent as the human beings. Although it is thought that the notion that the machines, that is, the mechanical systems in the general sense, can have the mental and cognitive processes emerged with the development of computers; the history of this expectation is quite old.

Today, even though within certain limits, the machines capable of making independent movements and overcoming obstacles can be produced. Even in the chess, a game characterized as a mind game; we witnessed that the computer beat the world champion Kasparov, who claimed that he played the game using his emotions and other human features in a way that no computer can do. However, even these extraordinary developments in the field of computer science do not provide enough proof for describing the computers as intelligent.

Even though there are some philosophers and scientists who say that the artificial intelligence is possible, we still cannot help seeing ourselves as a very special creature. Maybe the underlying reason for our thought is the fact that we still cannot exactly comprehend how the human mind works, or the thought that we want the human being to be

the only creature having this ability to which we attach great importance. As long as we cannot exactly understand the relationship between the mind and body, we cannot know how the natural intelligence works; therefore, it is difficult to understand whether the artificial intelligence is possible or not. While we describe a computer that processes millions of calculations in a second and can make moves in chess through these outputs as *intelligent*, we do not see a twinkle of intelligence in an advanced calculator that provides only the results through conducting the same calculations. In fact, here emerges the fact that the concept of intelligence is not always used in the right sense. While we do not hesitate too much to characterize a human being as intelligent for making the calculations that a computer can easily make; no matter how successful the computer is in this regard, we can list a lot of items in order not to call it intelligent.

### **The Concept of Artificial Intelligence**

Is there really a future waiting for us in which the artificial intelligence and robots get out of control, take the human beings as captives and turn them into slaves or energy sources? Will the robots breach the rules? Will the human being always be the master? When will the artificial intelligence surpass the natural intelligence? One day in the future, will we see the robots having eyes filled with tears?

Before answering these questions, the artificial intelligence should be defined. There is another thing before this: To understand what the intelligence is. But it is not that easy. Because there is no common agreed-on definition of the concepts such as the intelligence, consciousness, and the thought. There are many different definitions of intelligence from a wide variety of angles. (Okuyay, 2000)

The online Turkish Dictionary provided by the website of Turkish Language Association defines the term “intelligence” as “the gamut of the human being’s abilities of thinking, reasoning, comprehending the objective facts, judging and deducing; mental faculty, wisdom, astuteness, and sagacity.”

Based on this definition, we can define the artificial intelligence as “the gamut of the studies being conducted with the purpose of enhancing the ability of thinking, reasoning, comprehending the problems, and deducing through the computer software.” The artificial intelligence

studies basically involve the science and engineering activities to develop the "intelligent" machines and intelligent software with these capabilities.

The purpose of the studies on this field is to develop artificial intelligence applications that have the skills to learn, deduce, be aware of the environment it is in, interact with the objects in line with its purposes, calculate and evaluate, interpret and make decision.

The studies on the artificial intelligence have been developing with an increasing acceleration since the 1940s. In the meantime, the studies carried out to understand the human intelligence have been a great guide for the artificial intelligence studies. Since then, several approaches and a number of schools based on these approaches came into being (Güzeldere, 1998).

### **The History of Artificial Intelligence**

History of the concept of artificial intelligence is as old as the modern computer science. The founding father of the artificial intelligence is Alan Mathison Turing, who raised the question "can machines think?" and brought the machine intelligence up for debate. In 1943, during the Second World War, the concepts of computer science and artificial intelligence emerged thanks to the electromechanical devices produced to fulfill the Crypto Analysis requirements.

Alan Turing was one of the most famous mathematicians who tried to solve the Nazi's password algorithm for the Enigma machine. The studies which was started for the decryption in Bletchley Park; the computer prototypes such as Heath Robinson, Bombe, and Colossus with which Turing created his principles; and the data processing logic based on the Boole algebra brought about the formation of the concept of Machine Intelligence.

These machines and the programming logics, the ancestors of the modern computer, were actually inspired by the human intelligence. But later on, with the programs we can rather call expert systems, our modern computers became more common in the areas of usage for solving our everyday life problems. In the 1970s, the top computer manufacturers such as Apple, Xerox, and IBM made the computer popular and common with the PC (Personal Computer) model. On the

other hand, the artificial intelligence studies continued to be developed by a narrower research environment. (Allahverdi, 2002)

Today, the software that is successfully applied on the software with Machine Intelligence is awarded by prizes under the name of Loebner Prizes through the Turing Test, which is named after Alan Turing.

In short, the content of the test is as follows: A subject group comprised of a few people who do not know each other have a conversation with each other through an artificial intelligence dialogue system for a valid period of time. At the end of the conversation, which was made through the correspondence without seeing each other face to face, the subjects are asked questions to determine which subject human and which subject is a machine intelligence. Interestingly, in some tests carried out so far, the machine intelligence was guessed as human and the real humans were guessed as machine intelligence (Günday, 2003)

One of the most known examples of the Artificial Intelligence Dialogue systems that won the Loebner Prize is A.L.I.C.E. It was developed by Dr. Richard Wallace from Carnegie University. The reason why this and similar software are criticized is because these programs are predominantly a dialogue system (chatbot) due to the fact that the criteria the test measures are based on the conversation.

The machine intelligence studies are also being carried out in Turkey. These studies are being carried out independently by the universities in the fields of natural language processing, expert systems, and the artificial neural networks. One of these studies is D.U.Y.G.U. (Language Space Artificial Reality Reasoning).

### **Chronological Overview of the Artificial Intelligence on Date Basis**

In 1923, Czech playwright Karel Capek first used the word "Robot". The word "robot" means the forced labor in the Czech language. In his play Rossum's Universal Robot, Capek depicts a world where the robots go to work and work in factories like humans and manage the world after a while. Later on, the word "robot", which was used by Capek in his plays, was adopted by many languages and took its place in the common dictionary of science fiction film writers. (Searle,2006)

In 1943 was laid the foundations of the Artificial Neural Networks, just one of the artificial intelligence techniques developed through

mimicking the working structure of the human brain. In 1945, Isaac Asimov, a graduate of Columbia University, coined the term "Robotics." In 1950, Alan Turing introduced the Turing Test for evaluating the intelligence and published the "Computing Machinery and Intelligence." Claude Shannon published his study titled "Detailed Analysis of Chess Playing." In 1956, John McCarthy coined the term "Artificial Intelligence." Demonstration of the AI program was carried out at Carnegie Mellon University. In 1958, John McCarthy developed the LISP programming language for AI. In 1964, Danny Bobrow's dissertation at MIT showed that the computers could understand the natural language well enough to correctly solve the algebra word problems. In 1965, in the MIT Artificial Intelligence Laboratory, Joseph Weizenbaum built ELIZA, a natural language processing computer program that could carry on a dialogue in English. In 1969, the scientist from Stanford Research Institute developed Shakey, a robot having the ability of locomotion, perception, and problem solving.

In 1973, the first artificial intelligence research center in Europe was established at Edinburgh University. In 1979, Stanford Cart, the first computer-controlled autonomous vehicle, was built. In 1985, Harold Cohen created and demonstrated the drawing program "Aaron." In 1990, major developments were realized in all fields of AI and these developments are as follows: significant demonstrations in machine learning, case-based reasoning, multi-agent planning, scheduling, data mining, web crawler, natural language understanding and translation, vision, virtual reality, and games. In 1997, the Deep Blue Chess Program beat Garry Kasparov, the world chess champion then. In 2000, the interactive robot pets were started to be introduced into the market. MIT built Kismet, a robot that expresses its feelings.

Today, since it is only used in minor areas such as searching the internet or driving, the artificial intelligence is known in the form of weak (narrow) artificial intelligence. The long-term objective of the researchers is to create a strong (general) artificial intelligence called AGI (Artificial General Intelligence). While the weak artificial intelligence can carry out the tasks such as playing chess or solving equations better than the human beings, the artificial general intelligence (AGI) is expected to be superior to the human beings in almost all cognitive tasks. Provided that it can be kept under the human

being's control, the artificial intelligence is seen as a technology that will advance the humanity in many ways. When used with the purpose of supporting the human beings in the production and all processes, it is expected to make the things easier. (Penrose,2004)

### **Development Process of the Artificial Intelligence**

With the idealized definition, one of the first studies on the artificial intelligence and the artificial neural networks was carried out by McCulloch and Pitts.

The suggestion of these researchers was based on a computational model using artificial nerve cells, propositional logic, physiology, and Turing's theory of computation. They demonstrated that any computable function could be calculated through the networks of neural cells and that the "and" and "or" logical operations could be executed. They also put forward that if these network structures were properly identified, they could gain learning skills. Hebb proposed a simple rule to change the weights of the connections between the neural cells, and thus it became possible to create the artificial neural networks (Winston,1992 )

Later on, Newell and Simon developed the General Problem Solver, the first program produced according to the approach of thinking like a human being. Simon put forward the physical symbol hypothesis. This theory became the starting point of those engaged in the studies on creating the intelligent systems independent from the human beings. Simon's definition is important in terms of crystallizing the emergence of two different trends in the approaches of the scientists towards the artificial intelligence: Symbolic Artificial Intelligence, Cybernetics Artificial Intelligence (Gonenç, Arslan,2004)

### **The Advantages and Disadvantages of the Artificial Intelligence to Humanity**

Artificial intelligence has been a great success in terms of the computer users. First of all, it started to be known and accepted certainly by everyone. However, let's look at the other side of the coin. Let's have a look at the issues that are for and against the artificial intelligence (Öztemel, 2006)

## ***Advantages***

For the beginners, the artificial intelligence software will make the computers more useful than a \$500 home computer, a powerful minicomputer or a few million-dollar supercomputers. The users will be able to speak with the computers with their native languages (English, Turkish etc.) instead of secret commands and syntax of operating systems, computer languages, and application programs. With the help of the artificial intelligence, even those who have no education will be able to adapt to the computer immediately and do useful things. Using computers will not be more difficult than using a phone.

In order to achieve these very desired results, the special natural language interfaces will have to be developed. There are already many commercial natural language interfaces for the popular computer and software packages. Database management system (DBMS) is one of the first types of traditional software that uses the advantages of the natural language interfaces. These interfaces provide a quick and easy access to the data without any need for the ingenious programs. Spreadsheets, word processing packages, operating systems, and the other application programs incorporate the artificial intelligence methods to their programs in order to increase the productivity and make them more user-friendly.

Another great benefit is that the computers will become much more user-friendly. Computers are said to be the problem-seeking solutions. All the same, not all problems are based on the algorithmic or data processing solution that is the core of traditional computer-based information systems. Not all of the problems require the processes of calculation, data recording or roll-back. There are many problems that do not fit the capabilities of the traditional computer (Ladd, 2007)

Artificial intelligence can change all this. With the artificial intelligence techniques, new areas of opportunities open up. New problem types can be solved with this. The same computers can now address the problems regarding the access to the information, data acquisition, decision-making, and performing some functions that have been unique to humanity so far. Artificial intelligence is well suited for the disorganized problems in which the data is insufficient or unknown or there is no known algorithm. When combined with the user's experience, such



capabilities can improve the performance and productivity. Artificial intelligence techniques used in the expert systems have the potential to accelerate and facilitate the problem-solving and decision-making process in specific fields (Leibniz,2003)

One of the fields where we can see the great developments suitable for the artificial intelligence is the general processing of the information. Many of us are insatiable users and the creators and distributors of all kinds of information. There are lots of information that cannot be tracked, grouped or accessed. Industries have emerged to overcome many aspects of the information processing problem.

Despite all these efforts, many of us are still overloaded with excessive information and there are lots of information to deal with. Moreover, when we need information, we often do not know whether the information exists or not or how to obtain the information. When the information glut is real, we seriously need this information. We need this information to do our jobs very well and the information is absolutely necessary to learn more about the world and to live a comfortable life.

Although many of us agree that the computers are a part of the problem because they are the solutions, the computers can be very helpful in delivering solution to the information problem. There is no way to stop or slow down the creation of new information, and even if we could do this we probably wouldn't want to do. The secret is to find a way to use the computer to collect, group, and distribute the information in an organized way. Very large computer databases are started to be installed in order to store and retrieve the information conveniently. The information is started to be organized in a way that can be grouped for enabling one person to access it with a computer terminal through the telephone lines.

Artificial intelligence will help alleviate our being overloaded with excessive information. It will provide new ways of finding and accessing the information we need. In addition to this, the natural language interfaces will make the use of computer databases easier (Descartes, 1999)

Perhaps the most important aspect of the artificial intelligence is the fact that it will force and support the transformation of information into a

usable information. Typically, you need to analyze, organize, eliminate, and choose what is important for you. At this point, the information transforms into a usable information and can be used to solve a problem or to make a decision. (Doğan, 2002)

The logic of the smart home or building, which encompasses all of these attributes, is a starting point for realizing these artificial intelligence applications. For example, a biometric recognition system that uses a fingerprint or eye iris at the entrance of the door can recognize the owner of the house and opens the door automatically. This can be seen as the application of artificial intelligence at the first point of entrance to the houses.

### **Disadvantages:**

Of course, just like in everything else, the artificial intelligence also has the disadvantages. As the applications are developed, the artificial intelligence offers some advantages or benefits, but all of these have a cost. Ultimately, the computers will be very powerful and useful devices, but the increasing costs will be a disadvantage for us. Medium and large-scale artificial intelligence applications often require the powerful computers with a very fast central processing unit and a big memory size. Most of the artificial intelligence research and applications until 1990 were carried out on the mainframe computers such as the VAX series of Digital Equipment Corp. (DEC) (Chomsky,2001)

On the other hand, the microcomputers have become faster and more powerful. 16-bit and 32-bit machines have already become very ordinary and the 64 and 128-bit machines have started to be used by the standard users. The memory cards have become smaller, more compact, and cheaper. As a result, many artificial intelligence applications can be run on the workstations and the fast-personal computers.

Another disadvantage of the artificial intelligence is the difficulty of developing its software. Since they are complex and require programming with different understanding than the traditional programming, the artificial intelligence programs are often difficult. As a result of this, a lot of time is spent on developing the software and, of course, the software becomes more expensive. Software development tools, such as the advanced artificial intelligence programming

languages and the expert system development environments, make the software development faster and simpler. However, these development tools are often expensive, and they require the skilled and trained people to use them. (Nabiyev,2005)

In addition to this, there are very few people who can develop an artificial intelligence program. As the university's graduate more artificial intelligence engineer's day by day, there will be more programmers able to write the software. But now the number of them is really very few.

All in all, very few practical artificial intelligence products were introduced into the market except for the expert systems. There are a few natural language interfaces, a few voice recognition systems, and many software development tools and languages, and that's all. Of course, many products will be introduced in the future.

### **Artificial Intelligence Applications**

In fact, today, the artificial intelligence takes on important tasks in many fields, even though we are not very aware of this. For example, from takeoff to landing, the modern airliners are able to fly completely under the control of artificial intelligence. In the near future, the web will be one of the fields where the artificial intelligence will become most influential (Elmaz, 2003).

The artificial intelligence will play an important part in finding the ever-increasing content and the most relevant content among the websites. The semantic web will develop largely on the artificial intelligence applications. The classification of the data on the web and compiling and presenting the information that the users are looking for will be realized by means of the artificial intelligence. Some applications used in our daily life as a result of the researches on the artificial intelligence are as follows (Çüçen, 2001):

- *Expert systems:* Computer systems that process very large data about the real-life events and make decisions. Today, they are widely used especially in the business world. Expert systems play an important role in the decision-making processes in many fields such as the finance and meteorology forecasts.

- *Artificial Neural Networks:* Artificial intelligence systems

developed through modeling the neuron networks in the human brain. Unlike the billions of connections in the neural networks in the brain, the number of connections in the artificial neural networks is currently incomparably limited. Being a computation-based, trainable, and learning structure; the artificial neural networks give good results in the fields such as the voice recognition, natural language processing or optical character recognition software. There is a long way to go in terms of developing a "humanoid" intelligence structure through examining the human brain and simulating it in the computer environment. It is aimed to develop the self-learning systems as a result of these studies.

- *Speech translation and natural language processing solutions:* Computer programs that are developed to understand a given language. Whereas the voice recognition does not understand the language and only transcribe what is heard into writing, there is a certain amount of understanding and interpretation in the natural language processing. The "emotional computer" HAL, which was the main character of Kubrick's film "2001: A Space Odyssey" (2001) and could lip-read going beyond the natural language processing, was predicted to be released in 1997. However, even the most advanced computers are far behind HAL. Fuzzy logic is a type of logic that can interpret the gray tones in addition to the black-white, true-false or yes-no options and mathematically define and process these intermediate values. Today it is used in many fields. There are even subway networks operating through the artificial intelligence systems completely based on the fuzzy logic.

- *Computer games:* The game sector is one of the fields where the artificial intelligence can best manifest itself. An artificial intelligence application beat a human being in the game of chess for the first time in 1958. The year when a computer beat the world chess champion was 1997. IBM's Deep Blue, the supercomputer able to calculate 100 to 200 million different moves per second, beat Kasparov. However, the artificial intelligence, which has been very successful in the games such as chess, is not considered that successful in the relatively simple games such as go or backgammon for now.

- *Robot software:* The self-operating software that takes over some tasks carried out by others. The software, which learns the area of interest of the computer user and finds the information in these areas

from the various sources on the internet and compiles them, is also accepted as the artificial intelligence application.

- *Online Chatbots:* This chat software is based on the Turing Test. It is possible to find hundreds of different chatbots on the internet with a simple search. In the successful examples, it becomes increasingly difficult to understand whether the other side of the conversation is a human or a computer. There are also some studies on this field in our country. The purpose of this bot software is to give reasonable answers in the conversation and to give the feeling of a human. These applications are used in the customer services and technical support services on the websites.

### **Artificial Intelligence in the World**

The technology leaders with billions of dollars (IBM, Microsoft, and Apple etc.) and again the internet giants with billions of dollars (Google, Facebook, Amazon, and Baidu etc.) are at direct war in the field of artificial intelligence. This is not just a technology war. This is a war on preserving and expanding the market share. This is a war on offering the best customer experience. This is a war on preparing for the future, gaining the necessary competencies, and obtaining the competitive edge (Bechtel, 1998).

IBM has been working in the field of artificial intelligence for a very long time. In 1997, the Deep Blue beat Garry Kasparov in the chess game. Later on, IBM Watson was introduced and beat two of the most successful real human contestants in the Jeopardy game, which was very popular on the US televisions (Topçuoğlu, 2001).

Today, this technology is used to calculate predictions in the hospitals, military environments, and in different sectors, and to reveal the information beyond the human mind through very large data set (Ayer, 1998).

Microsoft and Apple are in a race to offer new interfaces to their consumers. By means of the voice recognition and speech comprehension ability, the personal assistants started to come into our lives. In the upcoming years, Siri and Cortana will become increasingly intelligent and able to do more processing, and they will become an ordinary friend and a normal chatmate for the Y generation and the Z

generation in the course of the day.

In this regard, the internet giants are not a mere spectator at all. On the contrary, by means of the huge amount of data they have and their technical competencies, they carry out very successful studies. There is a serious war between the technology giants and internet giants. There is a tough competition especially in terms of the talent scouting and the acquisition of new enterprises (Günther, 2006).

Companies like Google, Facebook, Baidu, Amazon, and Twitter scout for talent from each other. They are very voracious in terms of including the young entrepreneurs and enterprises they can be aware of. In recent years, especially Google has accomplished a lot of acquisitions and is taking a quick step forward in increasing the gap between it and its rivals and getting an edge over its competitors in terms of the artificial intelligence (Searle, 2004).

In history, there is a period known as “Cambrian Explosion.” A huge increase in the diversity of flora and fauna was observed in the air, land, and water due to the good climatic conditions, evolution readiness, and the similar reasons (Leibniz, 2003).

On the one hand, the technology and internet giants are fighting; and on the other hand, many new initiatives arise. The number of teams trying to solve the world's major problems with the brand-new algorithmic approaches through using large data volumes and large cloud data processing capabilities is exponentially increasing.

It is possible to make any ware, service, process or business model, you name it, smart by means of adding IT capacity to it. With the help of internet, social networks, big data, mobile communication, cloud computing and so on; today, the number of the smart applications have started to increase in many fields of our lives. And it will increase even more (Penrose, 1999).

But more importantly, in the upcoming period, the artificial intelligence will be added to these smart applications. Then and only then will these wares be really smart. They will make autonomous decisions, make the life easier, save lives, and save energy. Some competent teams already spotted these opportunities and roll up their sleeves.

## **Artificial Intelligence and Turkey**

The artificial intelligence has not yet become a topic around which lots of discussion exists, on which the investment is being made, and that appears in the press yet. But there are highly valued academicians in the universities. There are many successful entrepreneurs in the technicities. Some private sector companies create their own internal teams and carry out some experimental projects.

In recent years, the big data and analytic applications has come to the fore in Turkey. Institutions are developing projects on this field. Senior executives have been convinced that these competencies add value, and tangible and positive results have been achieved. Master's programs have been created on this field. Individual and institutional demand is quite high, and it is perceived as an attractive field of education and employment (Öztemel, 2006).

However, the same interest and awareness have not yet been formed in the field of artificial intelligence. It has not been yet fully comprehended what the artificial intelligence is, what its power is, how it is used, and what is needed for it.

Therefore, an urgent action is required. Turkey Artificial Intelligence Initiative will take concrete actions to fill these gaps and eliminate the shortcomings. An awareness will be raised in Turkey with the participation and support of all partners. Artificial intelligence will be brought to the fore. Measures will be taken to create the necessary competencies. It will be ensured that the projects, entrepreneurs, and the prizes won will be announced to everyone (Okyay, 2000).

## **Approaches and Criticisms About Artificial Intelligence in Literature**

Symbolic artificial intelligence: in the years following Simon's symbolic approach, the logic-based studies dominated, and a number of artificial problems and worlds were used to demonstrate the achievements of the programs. Later on, these problems were criticized for being the toy worlds that in no way represent the real life, and it was asserted that the artificial intelligence could only be successful in these fields and could not be scaled for solving the problems in the real life (Ladd, 2007).

The main reason why the developed programs showed a very bad

success when applied to the real-life problems was that these programs only simulated the syntactic processes and failed in terms of the processes such as the inferring, making connection, and reasoning. Although Eliza, which was one of the most famous programs of this period and developed by Weizenbaum, looked as if it was able to chat with its counterpart, but in fact it was only processing the sentences of its counterpart. When the similar approaches were used during the first machine translation studies and very ridiculous translations were encountered, the support for these studies was stopped. In fact, these deficiencies stemmed from the fact that the semantic processes in the human brain were not adequately studied (Günday, 2003).

Expert systems: The failure of both trends brought about the development of the idea of using programs equipped with the information in a specific field of expertise rather than the general purpose systems that will solve every problem, and this has led to a revival in the field of artificial intelligence. A methodology called “Expert systems” was developed in a short period of time. However, the typical situation often encountered here was that the expert system program, which was programmed for giving suggestions for the repair of an automobile, was not aware of what purpose the car served. Notwithstanding this, the success of the expert systems brought along the first commercial applications.

The artificial intelligence was gradually growing into an industry. The expert system called R1, which was used by DEC and able to select the equipment according to the customer orders, saved \$40 million for the company in a year. Suddenly, other countries rediscovered the artificial intelligence and began to allocate considerable resources to the research. In 1988, the turnover of the artificial intelligence industry reached to \$ 2 billion (Doğan, 2002).

Natural language processing: Once the anthropology science revealed the connection between the advanced human intelligence and the language, the artificial intelligence studies on the language gained importance again. It was understood that the human intelligence did not think directly through the concepts, but it thought through the language, and made connections between the concepts and the words, which were the language codes. By this means, the human mind was able to process faster than the animal brain that thinks through the concepts and had



the ability to effectively learn and abstractly expand its knowledge through the sentences that are the language, that is, templates. The studies on the computers that understand the natural languages such as Turkish and English, used in communication by people, started to accelerate. First, the programs that can understand the natural language, which once again emerged as the expert systems, were welcomed by those interested in the Symbolic Artificial Intelligence. And by means of the developments in the field of software, with the computer languages such as the English A.I.M.L (Artificial Intelligence Markup Language) and Turkish T.Y.İ.D (Turkish Artificial Intelligence Markup Language), the data access methods suitable for the syntactic pattern processing could be developed. Today, the symbolic artificial intelligence researchers are able to link the data with each other using the special artificial intelligence languages and trying to simulate the advanced cognitive functions such as the inference and deduction by means of the special procedures they developed. (Günther, 2006).

As a result of all these developments and processes, while a group of artificial intelligence researchers continued to study on the systems able to think like a human, another group focused on the merchantable rational decision-making systems (Expert systems).

It is not difficult to predict that all fields in the artificial intelligence studies will be merged in the future. The artificial Intelligence can create an alternative to the human intelligence in the future with a balanced blend of the followings: an artificial brain modeled with a cybernetic approach, cognitive processes and artificial consciousness systems simulating the human mind with a symbolic approach, willpower (decision making ability) having the emotions and as flexible as the human mind, the knowledge as competent as the expert systems, and the rational approach.

### **Discussions on the Artificial Intelligence from Past to Present**

When we look at the discussions on the artificial intelligence, it is seen that the emergence of the artificial intelligence project is in parallel with the emergence of the digital computers. This surmise is widely accepted both in the field of artificial intelligence studies and among those who are distant to the topic. Since the artificial intelligence is a field that tries to design the intelligent computers, it would not have been expected to

exist before the discovery of the computers. I assert that we should think over the question “Can machines think?” We should start by defining the meanings of the term’s “machine” and “thinking.” It is possible to consider Turing as the creator of artificial intelligence, who examined in depth the idea of computers that can think and categorized the views that oppose this idea under nine main headings (for example, machines cannot think because while the human nervous systems work according to the analog principles, the computers can only work according to the digital principles; machines cannot think because the structure of thought and consciousness is special to the creatures created by God, not the devices created by the humans etc.). The term “Artificial Intelligence” belongs to John McCarthy, the creator of LISP, the most common functional programming language in this field.

On the other hand, it is possible to consider that the idea underlying the artificial intelligence goes far back than the 1950s or even the twentieth century and exists independently of the conceptualization and design of the digital computers. “I will argue that this basic idea stems from the curiosity of the human being to build the likes of the creatures which came to existence as a result of the long evolutionary processes and they see, find, and encounter in the nature by using the non-living objects they find with their own hands in the nature” (Güzeldere, 1998). The furthest point of the this “building project”, which has been continued based on this curiosity since BC, can be seen as the human being’s attempt to fictionalize, design, and build their likes with their own hands. Therefore, the role the digital computers play in the field of artificial intelligence today is a role that was played by other products of technology in the earlier centuries and it can be asserted that for today the modern computers just constitute the last link of a long historical process.

If it is accepted that the basic idea of artificial intelligence is that the humans build the objects having the ability to act and move themselves by imitating the creatures in the nature, that is, the automatons; it can be seen that the first applications of this idea goes back to the 4th century BC. One of the first automaton makers in history is Tarantolu Arkitas, the ancient Greek scientist and philosopher. Arkitas was one of the second-generation mathematicians of the Pythagorean school and became the source of inspiration for both Plato and Euclid with his

studies on the mathematics of the mechanical tools. He built a wooden automaton pigeon that could turn in the air, without human intervention, around the bar to the tip of which it was attached by means of a steam mechanism.

In the same period, *Deus ex Machina* (Mechanical God), which was seen in the Greek theatre in the plays of Sophocles and Öriptides and was brought to the stage by a crane to change the flow of the play, can be considered as some sort of automaton (Ayer, 1998).

It is said that the automatons, similar to ones in the ancient Greek civilization, were built in the Han Dynasty in China again in the same ages. In the Islamic world, Al-Jazari, a scientist from Diyarbakir who lived in the Mamluk Empire period in the 12th century, designed and built himself an automaton, which was working according to the mechanical and hydraulic principles and was able to perform relatively complex tasks such as bringing drinks and filling the glasses (Denkel, 1996).

The human-made mechanical automatons continued to take an important place in the western world and in the imagery of the modern age. For example, on the one hand, René Descartes, one of the most important figures of the contemporary Western philosophy, passionately carried out studies on the anatomy and neurophysiology of the humans and animals and developed the models of the human nervous system based on the hydraulic principles within the theoretical framework of the 17th century; and "on the other hand, he kept on reasoning at length about the automatons and, accordingly, the nature of the human mind and life." (Cottingham, 2004).

Descartes classifies everything that exists from the ontological perspective into two mutually exclusive substantive sets the foundations of which were determined by space and idea (*res extensa* and *res cogitans*). According to Descartes, while all features related to the body, including the "vitality", are in the first set, rational all features related to the mind are in the second set. The following two results about the artificial intelligence can be deduced from the ontological hypothesis of Descartes, who sees the animals as the creatures that have only the bodies, not the souls (Descartes, 1999):

1. The project of building automatons is doomed to failure as long

as it is seen as the production of intelligent objects (having the mind) in real terms; because the mind is not categorically a product or a feature of the world of the spatial objects.

2. On the other hand, in principle, it is possible to build not only the watches or simple puppets but also the automatons that are as complex as the animals. Moreover, even if it never has a mind, an automaton with a sufficiently developed internal mechanical structure can be considered as "living being" like the animals.

In a letter he wrote to his student Regius in 1642, Descartes, who expresses his views on this subject in his various writings, states that: "You think as if there is a difference between the living things and non-living things bigger than the one between a clock or an automaton and a key or a sword or the non-self-moving any object. I do not agree with you" (Cottingham, 2004).

We can find a similar idea in the Descartes's book "The Passions of the Soul": "We should admit that the difference between the body of a living person and the body of a dead person is the same as the difference between a wound clock or a similar simple automaton, which has everything for self-operating and is built for this goal, and a machine of the same sort that is broken and therefore lost the mobility" (Huxley, 1998).

The British biologist Thomas Huxley, who is known for his views supporting the evolution theory of Darwin and the atheism in this regard, accepts some of assumptions of Descartes and reaches some conclusions different from those of Descartes. According to Huxley, if the animals are just the machines like the delicately designed and wound clocks; so, we, the human beings, are like them. According to the Huxley's point of view, it can be stated that in principle there is no obstacle for the artificial intelligence project to be totally successful (Searle, 2005).

One of the most famous automatons built in the modern age in Europe was the "chess playing Turk", which was built by Baron Wolfgang von Kempelen, one of the inventors who lived in the 18th century. "The Chess Playing Turk" was a mannequin that was sitting at a table with a chessboard on it and had a massive and turbaned 18th century Turkish man-looking with a big mustache. Baron von Kempelen took this

mannequin from city to city and allowed the people to play chess with the mannequin sometimes for show and sometimes for money and astonished the bystanders. In appearance, the human-made non-living giant mannequin, which was able to move the chess pieces by moving his hands and arms by means of a systematized mechanism and shake his head when his opponent made an inappropriate move, was able to play chess. And as a result of his correct moves, he won the matches most of the time.

Of course, the truth of the matter hidden from the audience was different. A dwarf chess master hidden in a hidden compartment at the bottom of the table could see the situation on the chessboard from where he was hiding by means of a mirrored mechanism, and with the help of small hidden levers he could move the mannequin's arms and play chess. Because of this trick, it can be said that the Baron von Kempelen's automaton "Chess Playing Turk" was not an automaton in fact and should not be mentioned as a historical part of the artificial intelligence project. Still, it is possible to say that: Even though it is certain that automatons built in the ancient and modern ages cannot technologically compete with the today's artificial intelligence systems; the idea in the essence of the artificial intelligence, that is, the idea of designing and building the likes of a human with his/her own hand, is not a new idea that emerged with the advent of digital computers, but a deeply rooted idea that kept the human mind occupied for many centuries, for which both lots of ink and lots of arm strength were spent. There is no doubt that today's computer technology has brought the artificial intelligence project to an advanced level that is unprecedented in history. But, if the intelligent machines are really to be built one day in the future, this does not necessarily confirm the inference that they will be built on the computer architectures in the sense we understand today (Elmaz, 2003).

Although the design of today's computers largely belongs to the mathematician Alan Turing, the idea of constructing self-calculating mechanical devices belongs to Charles Babbage, another British mathematician who lived in the past century. Babbage's "Analytical Engine", which was the first prototype of today's computers and operated in line with the mechanical principles, not the electronic principles, was abandoned due to the technical and financial

inadequacies in the 1830s after studying on the project for a long time and then it was no longer remembered until 1937, when Babbage's notes were found again.

Babbage could not see the final version of his machine, but it was redesigned in line with his notes by the British engineers in a way to be able to make calculations using the numbers up to 31 digits and completed in 1991 (Shaffer, 1991).

The model, which was created by Turing and developed by the Hungarian mathematician John von Neumann in the days following World War II, became the model for the modern electronic computers being used today. While Turing himself worked on the computers and computations on behalf of the British intelligence for decrypting the passwords used by the German army during World War II; after the war, he turned his attention to the field of artificial intelligence. In the same period, a group of researchers were also working jointly in the United States and trying to write simple computer programs that could solve the simple mathematical problems and play the games that do not require the physical skills, such as checkers and chess. And they were trying to identify the horizon of the contemporary artificial intelligence, which was yet in its infancy.

In this regard, in the summer of 1956, Marvin Minsky from M.I.T., John McCarthy from Stanford, Allen Newell from Carnegie-Mellon, Herbert Simon, and other researchers came together in a summer school at Dartmouth College, which constitutes a historical turning point (Penrose, 1999).

In the years following this summer school, the artificial intelligence studies gained momentum and the first successful results created big hopes for the future. For example, in 1958, Herbert Simon predicted as follows:

According to Simon, in the decade following his speech, that is, until 1968, the following stages will be reached in the field of Artificial Intelligence:

1. A computer program will win the world chess championship if it is not prevented from participating in the tournaments.
2. A computer program will discover and prove a new and significant mathematics theorem.

3. Many of the theories used in the psychology will be transformed into the computer programs or they will become the qualitative propositions about the features of these programs.

To what stage did the artificial intelligence have reached today, when over forty years, not ten years, passed since Simon's prediction? A computer program ("Deep Blue") managed to defeat a world chess champion, even with a delay of almost thirty years, that is, the first assertion of Simon came true. It's hard to say the same for the other two assertions; as a matter of fact, the situation is even worse. Looking at the studies in the mathematical proof programs, we are not in a position to make any sound predictions about when the second assertion will come true. When we look at the psychology studies, we see that they have been heading towards completely different directions that will not be able to confirm the third assertion in the future (Öztemel, 2006).

In fact, considering the initial principles and goals of the artificial intelligence; today, it is seen that the artificial intelligence is in a period of stagnation and change not only in mathematics and psychology but also in other fields of research. It is possible to draw this conclusion both from the statements of prominent figures of this field for the future and the fact that the research funds allocated for the non-commercial artificial intelligence projects have shrunk significantly compared to those twenty or thirty years ago.

Since the early days of the artificial intelligence studies, chess has been a game that has maintained its position in the focus, and a continuous progress has been made on it. Over the last decades, the chess competitions between the artificial intelligence chess programs and the great chess masters have attracted a great deal of interest among the public and have often made the headlines in the news in the popular press. It is clear that the creators of the "Deep Blue" reaped the results of their determined work from defeating Kasparov. But, as what kind of success criterion should this achievement be considered in terms of the primary stage that the artificial intelligence desired to reach?

In order to give a comprehensive answer to this question, let us first look at the nature of chess as a game and the nature of playing chess as an activity. Newell and Simon state the followings about the chess: "Chess is a game. There are many reasons why the games are found

attractive in the field of problem solving: The games are defined by the rules in a closed world. There is a certainly determined purpose. Winning/losing feature of the games (in our culture) is enough to ensure a motivation for the players even in the situation where there is no real opponent" (Winston, 1992).

Here, there are two very important points to consider. The first is the fact that all games, including chess, can be defined in an abstract and "closed world" that can be relatively easily simulated on a computer. For example, among the "need-to-know" list of a chess program, there is no qualification or feature belonging to the world outside the chess. While the situations outside the closed world of the chess game affect the human chess player, they never affect the chess player program. Some of these situations are as follows: Where, when, and for what purpose the game is being played; of what material or in what shape the chess board or its pieces are made, a chess game is based on a certain interaction, the chess players can be tired and careless if they could not sleep well the night before; if they lose the match because of a simple mistake, they may become ashamed of this; when they win, they become proud themselves, etc. But in a chess competition, these features and situations can be as important as the features of the closed world of the chess game for the human beings who are trying to defeat their opponents by using their intelligence. In this sense, it can be said that an artificial intelligence software programmed for playing chess can only understand what the game it is playing really is only when the features outside the closed world of the chess make sense for it.

Let's go even further: For a chess program, even it is not meaningful that the chess is played on an 8x8, 64-square board. Even if the chess is defined in the data structure of the program as a game played on a 64-square linear board that is attached side-by-side, this does not affect the performance of the program. However, such a change in the visual representation of the chess board would make it almost impossible for the human beings to play. Finally, considering the fact that, before making each move, the chess programs try thousands of times the number of moves the great chess masters think, and notwithstanding this, they make occasional mistakes that the very novice players can make; we can see that the humans and the machines are showing very different performances under the name of chess playing.



If this is the case; can we say that "Deep Blue" is a just a calculator that can scan a large number of possibilities in a very short period of time and therefore, does not look like an intelligent chess player and it is not different from a simple calculator that can do a lot of arithmetic operations in a very short time and multiply large numbers faster than any human being? At least, it can be said that "Deep Blue" belongs to the category of calculators rather than the category of chess players. But then, while no one shows interest in the calculators that can-do fast division/multiplications, why do the people show interest in the chess-playing machines?

We can find the answer to this question in the second important point Newell and Simon put forward in their statements about the chess. In terms of its place in the cultural history, chess has always been a competition where the winning or losing by using the intelligence was represented. Considering the complexity of chess compared to many other games and the value correspondingly given to the chess masters in the history, the importance attributed to the chess-playing programs becomes evident. In other words, the fact that people approach the chess as "a collision of opponents in the arena of minds" predominates over the problems regarding the internal mechanism of the computer program that constitutes the one of the competitors and diverts the attention from the internal structure to the performance. In a sense, that Baron von Kempelen's mannequin drew more attention than any other automaton of that time can be attributed to this.

All in all, even though "Deep Blue" has an important place in the contemporary history of the artificial intelligence, it is realistic to say that a part of this importance stems from our, the humans', point of view regarding the chess rather than that "Deep Blue" had an advanced conception of chess. While this is the case for the chess, let us now turn back to the question of why most of the predictions made by the AI researchers did not come true.

Many claims were made for the future in the field of artificial intelligence in the 1960s and later on it was understood that it was not possible to realize these claims. Patrick Winston explains this situation as follows: In the 1960s, the early years of the artificial intelligence, there were those saying that "the computers will become as intelligent as the humans in ten years." As it turns out later, it became evident that

this was a romantic prediction that would not come true. But some interesting reasons underlie this romanticism. When we carefully examine the predictions made on the artificial intelligence, we can see that those who made these predictions were not the dreamer freaks, but the intelligent and conscientious scientists who made reasoning about the serious possibilities.” These people were only trying to do their part in terms of preparing the people for a situation that they would soon face [for example, the intelligent robots pervading the world].

### **Use of Artificial Intelligence in Media: Radio Automations**

Artificial intelligence is actively used in many fields such as health and law, as well as in the fields of media and communication. While search engines are used with cookies and target marketing applications in the advertising industry, artificial intelligence shows itself to provide tailored content on digital television platforms. While artificial intelligence is used in the field of journalism to scan images from the archives and in searches, it is also used in this field to filter out objectionable expressions in terms of supervising the news content. While content provision used to be towards everyone in the traditional media, artificial intelligence offers a personalized publishing opportunity in the digital media. Artificial intelligence shows such serious developments that composers working with artificial intelligence in the field of music, robot servers that offer news with artificial intelligence have begun to emerge in the media industry.

Foundations of the use of artificial intelligence in radio systems began in the 1960s. The artificial intelligence used in management of algorithms developed through the automation of radio channels pioneered the birth of software that manages the streams of radio channels alone nowadays. Radio automations are software that works with the algorithmic infrastructure that detects the broadcast of music – voice programs in a radio channel.

The use of artificial intelligence in the radio media was first introduced in 1979 with RCS (Radio Computing System), the world’s most important automation software. Founded in 1979 by the Greek-born Dr. George Economos living in the United States, RCS pioneered the meeting of artificial intelligence and radio broadcasting. The company was acquired by Clear Channel in 2006. Today, RCS, which is used by more

than 7 thousand radio channels in 93 countries worldwide, continues its activities as the largest software system that combines artificial intelligence and radio media.

While RCS prepare archiving of music and programs published by a radio channel, namely its contents, it prepares daily broadcast stream, organizes the rotation of song streams prepared with a rule-based planning engine and an algorithmic structure, allows for publication of the prepared broadcast stream through the digital audio files and carries out large-scale works such as announcing copyrights of music and lyric contents published on a radio.



Fig1. RCS Automation Software Image

RCS acts as the broadcasting director of a radio by doing the work of multiple people on one channel alone. It stores a music library of thousands of songs, sorts these songs according to their characteristics such as content, tone, soloist and tempo, and it allows for sorting a song of the desired type according to the format of the radio channel, followed by another song of the desired type.



Broadcast Tape Cartridge

Fig. 2 Music Broadcast in Traditional Radio Broadcasting

Prior to the automations, the music works published on radio channels were published through records-CDs or cassettes. A staff member in the radio station's studio used to broadcast the songs on radio from individual CDs or tapes in the past. With the emergence of artificial intelligence automations, this work has begun to be done by automation. In this new publishing model, the staff in the radio studio were not needed, and the publication started to be offered through software.

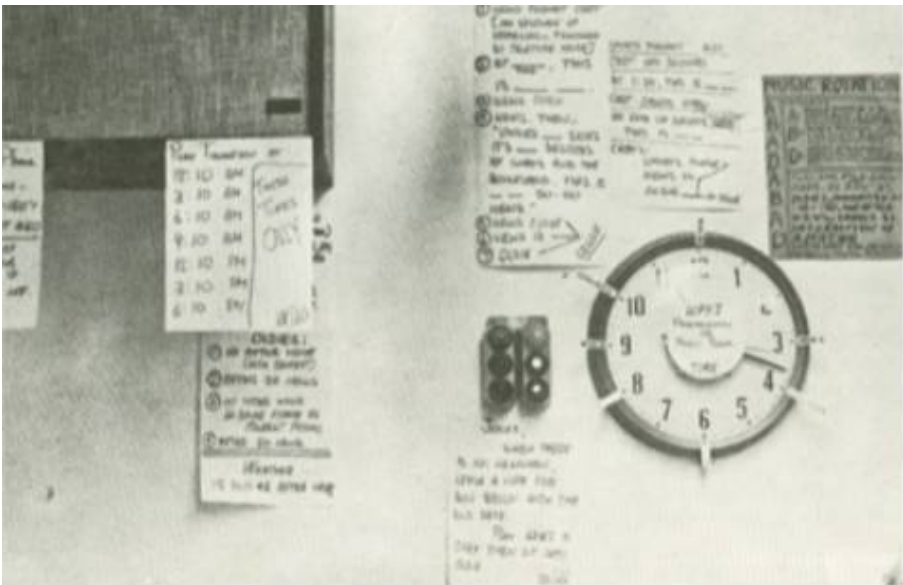


Fig. 3 Manual Flowchart in Traditional Radio Broadcasting

In a radio channel, it was determined by a manual work on topics such as the publication of the songs which would be published in a one-hour broadcast, which songs would be published, which promotional-jingle sound materials would be used. A music director who took the pen and the paper was doing these calculations with his own brain, and, of course, with some margin of error. Along with the emergence of radio automations, the sequence of songs and introductions to be broadcast on a radio channel in an hour began to be done through software consisting of algorithms directed by artificial intelligence.



Fig. 4 One Hour Streaming Format in RCS Automation Software Managed by Artificial Intelligence

As an example, the preparation of a stream of three songs on a radio channel requires minutes and even hours of work with human intelligence, while it takes a few seconds of work with automation and artificial intelligence thanks to RCS.

👉 **Song 1:::::** Performed in 1984 by a male vocal, published in the English-speaking rock-themed, in-major tone, a song that was never

released on Thursday

Rock main-themed jingle

🔗 **Song 2**::::: A song produced in the 2000s (2000-2010), spoken in Turkish, in a minor tone, a day before (Wednesday), performed by a female vocal,

Introducing one of the programs to be released on Saturday

🔗 **Song 3**::::: A song performed by a group, published in 2018, with Turkish lyrics, in a cover feature, which was not published in the last seven days,

The RCS can prepare such a stream with complex features shown above in minutes thanks to the algorithmic structure in which the flow has an infinite plane. When preparing this, the user can redirect with the commands given to the software and then enjoy the resulting stream. Automation allows the user to create a broadcast stream that he wants by offering hundreds of commands in writing. For example, the radio manager can bring demands to life thanks to the artificial intelligence of RCS such as if a song is not released one day later, if a song is published every two days, if songs in the category that comprise a song group are broadcast at six hour intervals, 4 times a day, if a song can be used during drive time belt called as traffic clock on the radio, or vice versa, broadcast only during those periods. With schedule of the automation system, the radio channel can prepare even a decade of broadcast flow and activate it at any time interval.

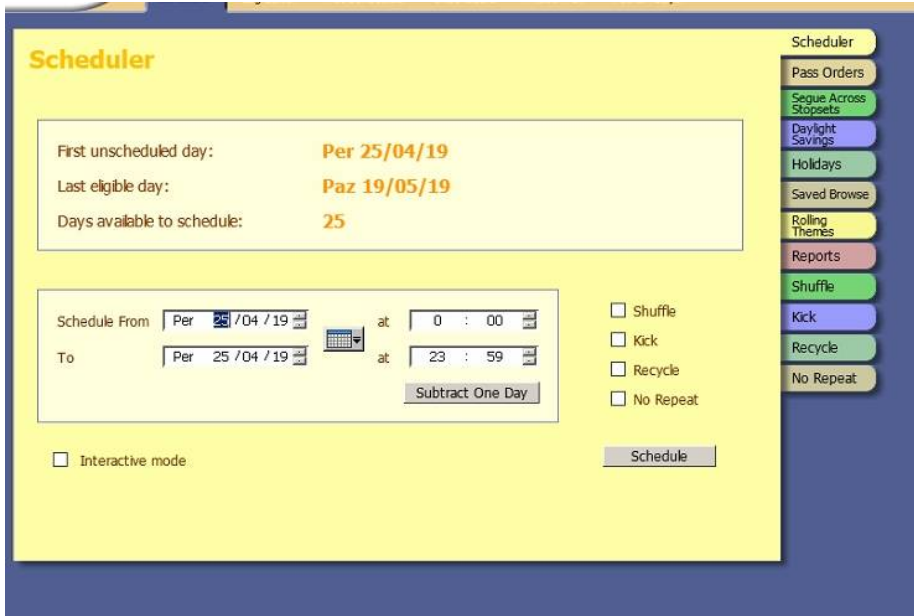


Fig. 5. Broadcast Flow Preparation Panel in RCS Automation

| Head Icon | Air Time | CA | Audio Icon | Cart Label                                | ID | Time | Chain Icon | Status | Date    | Category Name       | Last Edited Date | TFE | TFC | TFO | TW | Timing | Title                      |
|-----------|----------|----|------------|---|----|------|------------|--------|---------|---------------------|------------------|-----|-----|-----|----|--------|----------------------------|
|           | 19:33:38 | F1 |            | INNAMORAMI DI TE                          |    | 7.9  | 2:47       |        | 23/4/19 | ANIMAN COVER        | 23/4/19 11:59    | 7   | 2   | 1   |    |        | INNAMORAMI DI TE           |
|           | 19:36:25 | p1 |            | 25 DAKIRA GENEL TANITIM                   |    | 0:19 |            |        | 23/4/19 | PROMO               | 23/4/19 13:56    |     |     |     |    |        | 25 DAKIRA GENEL TANITIM    |
|           | 19:38:43 | C1 |            | TAMIRCI CIRAGI                            |    | 26.4 | 4:43       |        | 23/4/19 | YERLI (1990 ONCESI) | 23/4/19 13:56    |     |     |     |    |        | TAMIRCI CIRAGI             |
|           | 19:41:26 | s1 |            | CRI TURK SWEEPER 5                        |    | 0:08 |            |        | 23/4/19 | SWEEPER             | 23/4/19 13:29    |     |     |     |    |        | CRI TURK SWEEPER 5         |
|           | 19:41:35 | 01 |            | OLUR YA (AKUSTIK)                         |    | 26.9 | 4:19       |        | 23/4/19 | COVER TURKCE        | 23/4/19 13:56    |     |     |     |    |        | OLUR YA (AKUSTIK)          |
|           | 19:45:54 | s1 |            | CRI TURK SWEEPER 10                       |    | 0:13 |            |        | 23/4/19 | SWEEPER             | 23/4/19 13:53    |     |     |     |    |        | CRI TURK SWEEPER 10        |
|           | 19:46:07 | C1 |            | CIRAK YIKIRTI PREZER ZANAR BEKIRER JONKER |    | 0.8  | 2:48       |        | 23/4/19 | ANIMAN COVER        | 23/4/19 11:58    | 6   | 1   | 1   |    |        | CIRAK YIKIRTI PREZER ZANAR |
|           | 19:48:55 | s1 |            | FREKANS TANITIM 4                         |    | 0:28 |            |        | 23/4/19 | SWEEPER             | 23/4/19 13:56    |     |     |     |    |        | FREKANS TANITIM 4          |
|           | 19:49:15 | C1 |            | BENI UNUTMA                               |    | 20.5 | 4:45       |        | 23/4/19 | YERLI (1990 ONCESI) | 23/4/19 13:56    |     |     |     |    |        | BENI UNUTMA                |
|           | 19:54:00 | j1 |            | JINGLE CUT                                |    | 0:04 |            |        | 23/4/19 | JINGLE              | 23/4/19 12:10    |     |     |     |    |        | JINGLE CUT                 |
|           | 19:54:04 | j1 |            | AJANSRESS SPOT                            |    | 0:37 |            |        | 23/4/19 | PROMO               | 05/06/18 12:41   |     |     |     |    |        | AJANSRESS SPOT             |
|           | 19:54:41 | j1 |            | JINGLE 10 SN                              |    | 0:10 |            |        | 23/4/19 | JINGLE              | 22/4/19 14:20    |     |     |     |    |        | JINGLE 10 SN               |
|           | 19:54:51 | 01 |            | YOU ARE NOT ALONE                         |    | 0.0  | 5:10       |        | 23/4/19 | YABANCI OLDIES      | 23/4/19 13:29    |     |     |     |    |        | YOU ARE NOT ALONE          |
|           | 20:00:00 | =  |            | Exact Time Marker                         |    |      |            |        | 23/4/19 | Exact Time Marker   |                  |     |     |     |    |        | Exact Time Marker          |
|           | 20:00:00 | j1 |            | ANA JINGLE SAAT BASI                      |    | 1:04 |            |        | 23/4/19 | JINGLE              | 20/4/19 06:57    |     |     |     |    |        | ANA JINGLE SAAT BASI       |
|           | 20:01:04 | s1 |            | BU BIR YENDEN ILETIMDIR                   |    | 0:02 |            |        | 23/4/19 | PROMO               | 02/4/19 10:56    |     |     |     |    |        | BU BIR YENDEN ILETIMDIR    |

Fig. 6. Screen Shot of the Flow Prepared by Artificial Intelligence-Driven Algorithmic Structure of the Automation Program

Radio automation can carry out extensive broadcast analyses related to the channel in addition to preparation of broadcast flow and making the prepared flow on air. The song's analyses and statistical information on that radio channel are analyzed according to time, and the channel

owner is presented with a photograph of its broadcast strategy. In addition, the songs and lyrics that are broadcast on the radio channel can be traced through these analyses to the owners of the works. RCS reports on the number of publications published, how much time it is published, as well as on line to the professional associations following the artists' copyrights, and helps to follow the copyright.

The screenshot shows the 'Most Frequently Played' report for Artists. The interface includes a navigation bar with 'Library', 'Policy', 'Clocks', 'Schedulers', 'Utilities', 'Analysis', 'Log', and 'Reports'. Below this, there are tabs for 'Historical', 'Projected', 'Library Statistics', and 'Exposure'. The main content area has tabs for 'History', 'Most Frequently Played', 'Artist Title', 'Schedule Average', and 'Schedule Counts'. The 'Most Frequently Played' section is active, showing a table of results for the period from 18/04/2019 00:00 to 24/04/2019 23:59. The table lists the rank, spins, and artist name for each record. The total spins for this period are 2287.

| Rank | Spins | Artist         |
|------|-------|----------------|
| 1    | 39    | GOKSEL         |
| 2    | 37    | AJDA PEKCAN    |
| 3    | 36    | AYTEN ALPMAN   |
| 3    | 36    | FATMA TURGUT   |
| 3    | 36    | FERHAT GOCER   |
| 3    | 36    | ONUR METE      |
| 7    | 35    | IREM DERICI    |
| 8    | 34    | BURAY          |
| 8    | 34    | GECE YOLCULARI |
| 8    | 34    | GULSEN         |
| 11   | 33    | AYNUR AYDIN    |
| 11   | 33    | NILUFER        |
| 13   | 32    | SEZEN AKSU     |
| 14   | 30    | YALIN          |
| 15   | 29    | IZEL           |
| 15   | 29    | ZERRIN OZER    |
| 17   | 28    | GRIPIN         |
| 18   | 27    | TARKAN         |
| 19   | 27    | ATILAY         |

Total spins: 2287

The screenshot shows the 'Most Frequently Played' report for Song Title. The interface is identical to the previous screenshot, but the 'Rank of' filter is set to 'Title'. The table lists the rank, spins, and song title for each record. The total spins for this period are 2287.

| Rank | Spins | Title                 |
|------|-------|-----------------------|
| 1    | 36    | BIR VARMIS BIR YOKMUS |
| 1    | 36    | BU DA GECECEK         |
| 3    | 35    | BU SENIN SARKIN       |
| 3    | 35    | MEFTUN                |
| 3    | 35    | PISMANIM              |
| 3    | 35    | SENSIN (2019)         |
| 7    | 34    | BIR IHTIMAL BILİYORUM |
| 7    | 34    | KABAHAT BENDE         |
| 9    | 33    | DUSUNE DUSUNE         |
| 10   | 28    | SOR BANA SOR          |
| 11   | 23    | DEVA BIZE SEVİSLER    |
| 12   | 20    | KALBİMİN ANKARASI     |
| 12   | 20    | UZULME                |
| 14   | 19    | BİZİM AGAC            |
| 15   | 18    | CAL GİTAR             |
| 16   | 17    | KATAKULLI             |
| 16   | 17    | SANA DOGRU            |
| 16   | 17    | YARALANDIM            |
| 19   | 15    | RIRI KITE YANARIZ     |

Total spins: 2287

Fig. 7. Examples of Analyses of Songs or Singers Published during a Specific Time Period in Radio Automation



## **Conclusion and Discussion**

The computer has developed too much since the day it was first built 70 years ago. In line with the Moore's law, its computing power has increased by two times every 18 months. If it continues to follow the Moore's law curve, it is believed that the processing capacity of a processor will reach to the processing capacity of the human being by 2030. On the other hand, today, the amount of information stored digitally is very large. Search engines like Google store millions of copies of the existing web pages and the mail services companies store our millions of messages. Social networks recorded our interests and friendships. In order to use in the future, companies should keep any information, even if they are unimportant. Naturally, the increase in processing speed and having more storage capacity mean that the systems have more sources to make decisions, and these decisions are made more consciously and in a more personalized way.

Today, the computer and social media analysis are being carried out using the big data analysis in which the artificial intelligence techniques are used and by means of these analyses we can do the followings: tweet analysis on Twitter; estimating the possible results when searching on Google; on Facebook, examining the favorite pages, content, and the friends and suggesting the similar topics; software such as the Apple's Siri and Google's Google Now. Again, the sales optimization is carried out through analyzing the consumer preferences and rational consumers, and the artificial intelligence is preferred because it is able to analyze the past experiences quickly in detecting the fraudsters and recognizing the individuals during the security clearance process within or outside the company (Serim, 2015). Here are a few examples of what the different disciplines can do with the artificial intelligence: An electronic commerce customer can make a query for the products similar to the image he has uploaded from the Pinterest interface and receive the targeted product suggestions according to his/her profile and preferences; Shazam, a popular voice recognition application, can listen to the sounds and bring the desired music to the device; before the customer places an order, Amazon can parcel the product up and send it by means of evaluating the previous orders, product searches, wish lists, shopping card contents, returns and other online shopping data (Dal, 2014). Along with the mobile communications, cloud

technologies, and the robot technology; all these developments give us some clues about that the artificial intelligence will be more important in the future.

Radio automations managed using artificial intelligence can carry out the work alone in a radio channel which could be done by more than one person with lot of work on a daily basis. Nowadays, the automations that provide the balance between music and voice of broadcast flow can prepare a music stream in a desired aesthetic of the radio channel. While there was a DJ working 24 hours a day for music broadcasting in traditional radio broadcasting, and there is no need for a DJ to broadcast music today. Again, while radio broadcasts made through materials such as CD-cassette – Records in the traditional radio broadcasting, now, they are presented with MP3 files directed by artificial intelligence. CD players have become extinct, large studios that hosted archives with players, recorders and archives have gone, and small studios managed by radio automations with a screen and hardware have emerged.

The first news broadcaster with the artificial intelligence produced in 2018 threatens the future of broadcasters and program makers as well. The news texts produced thanks to artificial intelligence will also threaten the existence of news texts produced by human brain and human hand. Along with the emergence of artificial intelligence-managed robot servers, the management of radio and television broadcasters will also be carried out by artificial intelligence, and this also reveals the question of “Is the media industry going under the occupation of artificial intelligence?”. In such a case, even the growth of the unemployment and employment problem that already exists in the media industry will be raised, and even the necessity of communication faculties will be discussed.

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