



"Research is creating new knowledge." -Neil Armstrong

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ARTIFICIAL INTELLIGENCE

## Research Application - Artificial Intelligence

By III MCA

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Artificial Intelligence is likely to be either the best or worst thing to happen to humanity

-STEPHEN HAWKING

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## VIRTUAL PERSONAL ASSISTANCE



### Introduction:

As the world is moving towards computing utopia, people are being more consensus towards the virtual world. Now a day's people are using more and more virtual tools for designing, i.e., from small circuits to large networks are made virtually for testing before implementation, simulations are down virtually. So, virtual reality has become a part of our life.

**Speech processing** has been an area of interest for the last four decades, but the last decade has witnessed significant progress in this area of research. This progress has been possible mainly due to the recent advantages made in the powerful and efficient speech processing techniques such as vector quantization, hidden Markov Model etc. Here we have used the Markov Model for predicting the command that we have given via the mic as input to our system, and for the output it segments the sentence into words and then check the words in the data set for its converted speech signal.

**Virtual Personal Assistance** works on real time, as its give the required output instantaneously. As we give the command to it via the mic, the speech or command that we have given is first processed and then it is converted to text, then form the text the keys words are extracted and then check with the modules which is stored in

the local hard drive, if the keywords match with any of the modules then that particular module will be executed, if the key word doesn't match with any of the modules than it will just tell the user to try again or it didn't understand what the user wants.

### Top Intelligent Virtual Personal Assistance:

#### 1. Siri:

Siri is a software that helps you manage your activities through reminders for smooth operations. You can ask Siri to do a list of tasks to help you with.

For example: To call a 'friend' or a 'relative'.

#### 2. Google Assistance:

Google Assistance allows you to basically enquire about anything, be it questions about the weather, flight status, or places; Google assistance does the search for you.

#### 3. Google Now:

The Google app keeps you in the know about the things you care

about. Find quick answers, explore your interests, and get a feed of stories and updates on topics that matter to you. The more you use the Google app, the better it gets.

#### 4. Cortana:

Cortana is an intelligent personal assistance created by Microsoft that offers personal digital assistance through reminders and helping you work across devices. It helps you meet and keep your commitments.

### Conclusion:

Virtual Personal Assistants are very effective way to organize your schedule. Now there are many Smart Personal Digital Assistant applications available in the market for various device platforms.

These new Software Applications are performing really well than PDA devices as they provide with all the resources of your smartphone.

Virtual Personal Assistants are also more reliable than Human Personal Assistant because, VPA's are more portable and you can use them

anytime. They also have a lot of information than any assistant as they are connected with the internet.

## ARTIFICIAL INTELLIGENCE IN SPACE

NASA's Space AI Hunts Exoplanets, Not Humans — Yet

When it comes to artificial intelligence, NASA and other space agencies are nowhere near building a "Terminator" in space. So, you can rest easy — Arnold Schwarzenegger isn't about to hunt you down because you're leading a rebellion against the machines.

Artificial intelligence is in its infancy, but scientists have used it to find alien planets, classify galaxies and create spacecraft capable of dodging debris. More uses will follow. But some critics, like SpaceX founder Elon Musk and the renowned physicist Stephen Hawking (recently deceased), have warned that artificial intelligence could be dangerous if left unchecked.

The key question for humanity today is whether to start a global AI arms race or to prevent it from starting. If any major military power pushes ahead with AI weapon development, a global arms race is virtually inevitable, and the end point of this technological trajectory is obvious: Autonomous weapons will become the Kalashnikovs of tomorrow," the letter read, referring to the automatic weapons.

Musk and Hawking also expressed concerns about AI separately. In 2014, Hawking said artificial intelligence might end up annihilating the human race. And



just a few weeks ago, Musk mused in a documentary that AI research might create an "immortal dictator from which we could never escape".

Rogue AI is a popular theme in science fiction, ranging from the programs in "The Matrix" film series to the computer HAL in "2001: A Space Odyssey" to the Cylons in the 2004-09 reimagined version of "Battlestar Galactica." But scientists say that thinking of these machines as killer automatons is simplistic and not representative of reality.

### Classifying exoplanets in AI:

There are many real-life uses of AI in astronomy. For instance, one team is using artificial intelligence — more precisely, "machine learning" — to recognize and classify exoplanets that are similar to rocky worlds in our own solar system, like Mars and Earth. The researchers on that team told Space.com they are using an artificial neural network, which behaves a bit like a human brain in the way individual neurons connect

and how the network learns from experience by examining images and data to form conclusions.

This system can recognize what elements are in a planet's atmosphere by analyzing the light from the world's parent star passing through that atmosphere. From there, the system can find elements that might indicate the world is hospitable to life, such as oxygen or methane.

"Human beings are good at recognizing complex images and being able to put them into categories, but the boundaries are always a little soft," Koo told Space.com. The advantages of a deep learning system are that, unlike humans, it doesn't get tired and it can grade consistently.

## BLOCKCHAIN AND ARTIFICIAL INTELLIGENCE



Blockchain is best used in a distributed system where nodes are not necessarily trustworthy. Whereas AI gains little from being distributed. It is best used on problems such as inferring rules of behavior, predicting eventual outcomes, determining underlying causes.

Blockchain is essentially a new filing system for digital information, which stores data in an encrypted, distributed ledger format. Because data is encrypted and distributed across many different computers, it enables the creation of tamper-proof, highly robust databases which can be read and updated only by those with permission.

So here are three ways in which AI and Blockchain are made for each other:-

### 1. AI and encryption work very well together

Data held on a Blockchain is highly secure.

What this means is that, Blockchains are ideal for storing the highly sensitive, personal data which, when smartly processed, can unlock so much value and convenience in our lives.

For Example: Think of smart healthcare systems that make accurate diagnoses based on our medical scans and records, or even

simply the recommendation engines used by Amazon or Netflix to suggest what we might like to buy or watch next.

The businesses that deal in it must put up large amounts of money to meet the standards expected of them in terms of data security.

Blockchain databases hold their information in an encrypted state. This means that only the private keys must be kept safe, in order for all of the data on the chain to be secure.

### 2. Blockchain can help us track, understand and explain decisions made by AI

Decisions made by AIs can sometimes be hard for humans to understand. This is because they are capable of assessing a large number of variables independently of each.

As an example : - AI algorithms are expected to increasingly be used in making decisions about whether financial transactions are fraudulent, and should be blocked or investigated.

for example, : - Feeds a months' worth of transactional data across all of its stores into its AI systems which make decisions on what products should be stocked, and where.

If decisions are recorded, on a data point-by-data point basis, on a Blockchain, it makes it far simpler for them to be audited, with the confidence that the record has not been tampered with between the information being recorded and the start of the audit process.

### 3. AI can manage Blockchains more efficiently than humans.

As an example : - the hashing algorithms used to mine blocks on the Bitcoin Blockchain take a "brute force" approach, effectively trying every combination of characters until they find one which fits to verify a transaction.

AI is an attempt to move away from this brute force approach, and manage tasks in a more intelligent, thoughtful manner.

Here, Blockchain and AI are two technological trends which, while ground-breaking in their own

rights, have the potential to become even more revolutionary when put together. Both serve to enhance the capabilities of the other, while also offering opportunities for better oversight and accountability.

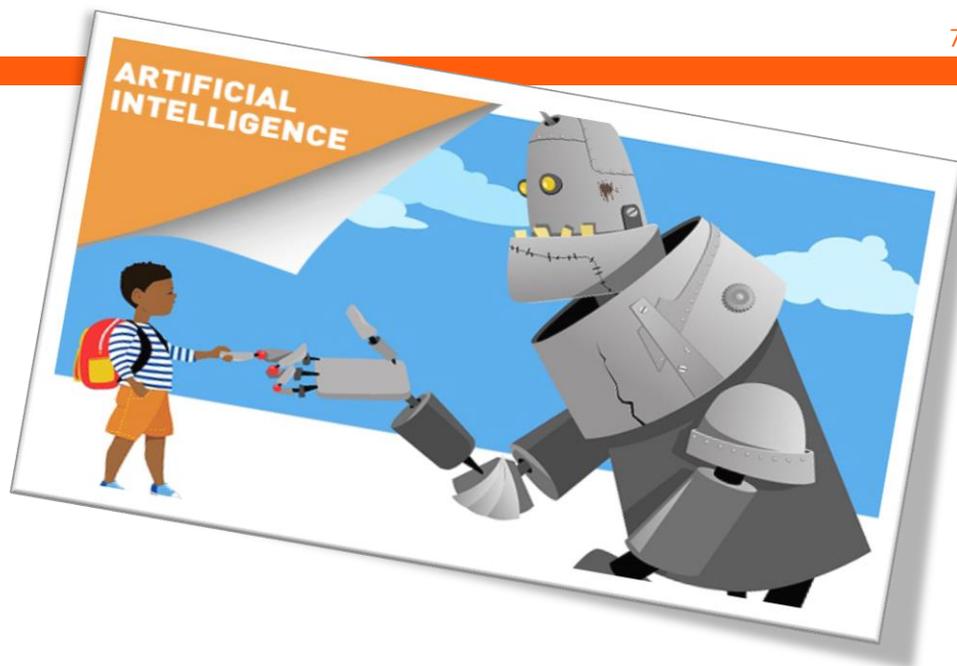
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# ARTIFICIAL INTELLIGENCE IN EDUCATION

In order to prepare our next generation to face the skill-shift with grace, we need to implement some changes in the current education system. Our present school system cannot compete with the Fourth Industrial Revolution in areas such as robotics, machine learning, and artificial intelligence. Schools, Universities, and educational institutions need to introduce AI in education.

A basic step could be making students aware of the capabilities of Artificial Intelligence and how the concept actually works. Artificial intelligence is capturing every area of our daily lives. We all are constantly using it. It is there in our mobile phones, shopping apps, and games. In fact, the role of artificial intelligence in education is becoming momentous day by day.

The teachers are creating smart content and provide online assignment help as per the individual requirements of the learners so that they can learn the concepts more easily. It is because of artificial intelligence that the teachers can rapidly identify and bridge those learning gaps for their students. Artificial intelligence in education is not a completely new subject matter for the students. They are using it every day. Hence, all we need to do is make every student aware of the technical aspects of it.



## 1. How AI Impacts Education

Artificial intelligence (AI) is the perfect example of how something new could be used to change every aspect of our lives when we change the lens. And education is an area that has unlimited potential to utilize innovation. The ability to tap into new technologies to enhance and accelerate the learning process can streamline everything from admissions and grading to student access to vital resources.

## 2. The Benefits of AI in Education

**Personalization:** It can be overwhelmingly difficult for one teacher to figure out how to meet the needs of every student in his/her classroom. AI systems easily adapt to each student's individual learning needs and can target instruction based on their strengths and weaknesses, meaningless work for teachers and a more meaningful learning experience for students.

**Tutoring:** Machines are taking on the role of humans in many capacities, including tutors. As with human tutors, “Intelligent Tutoring Systems” can gauge a student’s learning style and pre-existing knowledge to deliver customized support and instruction.

**Grading:** Machines are now so far advanced that they can do much more than simply grade an exam with an answer key; they can compile data about how students performed and even grade more abstract assessments such as essays.

**Feedback on course quality:** AI can identify instruction gaps in the course content based on student performance on assessments. For example, if a significant percentage of students answer a question incorrectly, AI can zero in on the specific information or concepts that students are missing, so that educators can deliver targeted improvements in materials and methods.

## 3. The Future of AI in Education

There has been a lot of progress in this field in the past few years, as more and more companies have been involved in projects that aim to augment, improve, and change the way teaching is done. The field of Education is definitely ripe for innovation, and the advancement of artificial intelligence may be able to provide that innovation. The right applications of AI can result in students having a vastly more detailed and substantial education, as AI program can do way more to identify and target their individual strengths and weaknesses, and teachers can be aided by AI in order to have a larger amount of impactful teaching time with their students. Overall, education systems all over the world stand to greatly benefit from the proper integration of artificial intelligence in their schools.

## **Conclusion**

Artificial intelligence and the technology are one side of the life that always interest and surprise with new ideas, topics, innovations, products etc. AI is still not implemented as the film representing it (i.e. intelligent robots) however there are important tries to reach the level and to complete in the market, like sometimes the robots that they show in T.V nevertheless, the hidden project and the development I the industrial companies.

## ARTIFICIAL INTELLIGENCE FOR VIDEO SURVEILLANCE

Artificial intelligence for video surveillance utilizes computer software programs that analyze the images from video surveillance cameras in order to recognize humans, vehicles or objects. Security contractors program the software to define restricted areas within the camera's view (such as a fenced off area, a parking lot but not the sidewalk or public street outside the lot) and program for times of day (such as after the close of business) for the property being protected by the camera surveillance. The artificial intelligence ("A.I.") sends an alert if it detects a trespasser breaking the "rule" set that no person is allowed in that area during that time of day.

### How A.I works in video surveillance?

The A.I. program functions by using machine vision. Machine vision is a series of algorithms, or mathematical procedures, which work like a flow-chart or series of questions to compare the object seen with hundreds of thousands of stored reference images of humans in different postures, angles, positions and movements. The A.I. asks itself if the observed object moves like the reference images, whether it is approximately the same size height relative to width, if it has the characteristic two arms and two legs, if it moves with similar speed, and if it is vertical



instead of horizontal. Many other questions are possible, such as the degree to which the object is reflective, the degree to which it is steady or vibrating, and the smoothness with which it moves. Combining all of the values from the various questions, an overall ranking is derived which gives the A.I. the probability that the object is or is not a human. If the value exceeds a limit that is set, then the alert is sent. It is characteristic of such programs that they are self-learning to a degree, learning, for example that humans or vehicles appear bigger in certain portions of the monitored image – those areas near the camera – than in other portions, those being the areas farthest from the camera.

In addition to the simple rule restricting humans or vehicles from certain areas at certain times of day, more complex rules can be set. The user of the system may wish to know if vehicles drive in one direction but not the other. Users may wish to know that there are more than a certain preset number of people within a particular area. The A.I. is capable of maintaining

surveillance of hundreds of cameras simultaneously. Its ability to spot a trespasser in the distance or in rain or glare is superior to humans' ability to do so.

This type of A.I. for security is known as "rule-based" because a human programmer must set rules for all of the things for which the user wishes to be alerted. This is the most prevalent form of A.I. for security. Many video surveillance camera systems today include this type of A.I. capability. The hardware that houses the program can either be located in the cameras themselves or can be in a separate device that receives the input from the cameras.

### Why AI will be an inevitable part of video surveillance?

The rise of artificial intelligence (AI) is beginning to revolutionize technology in various industries, and security is prominent among them. Video surveillance solutions, for instance, are now seeing an onrush of AI-based applications. This is not just from large companies but also smaller startups

that are coming up with innovative solutions.

AI will become an integral part of video surveillance solution in the coming years:

1. Proactive and Real-Time Protection
2. More Efficient Than Humans
3. Intelligent Object, Event, and Facial Recognition
4. Image Quality Enhancements
5. Managing Massive (Read Big) Data

### **Advantages of Using Video Camera Surveillance**

1. Promotes Safety and Security
2. Deters Violence
3. Increases Productivity
4. Development Of Business