

Cloud Technologies for Basics of Artificial Intelligence Study in Education

Dr.Pulipati Nageswar, Assistant Professor in computer Applications,
Govt.City College, Nayapul, Hyderabad,
tejanagesh@gmail.com

Abstract:-

I have chosen this topic to spotlight on one of the most technological trend these days known as AI (*Artificial Intelligent*). Therefore; I will discuss some of the most important aspects related to AI in which it will help in a better understanding of Artificial Intelligent and both its advantages and disadvantages to be able to protect ourselves from the upcoming technological trend. This paper will also discuss some of the algorithms used in AI systems.

History of Artificial Intelligence:

Artificial Intelligence was first proposed by John McCarthy in 1956 in his first academic conference on the subject. The idea of machines operating like human beings began to be the center of scientist's mind and whether if it is possible to make machines have the same ability to think and learn by itself was introduced by the mathematician Alan Turing. Alan Turing was able to put his hypotheses and questions into actions by testing whether "*machines can think*"? After series of testing (later was called as Turing Test) it turns out that it is possible to enable machines to think and learn just like humans. Turing Test uses the pragmatic approach to be able to identify if machines can respond as humans.

Description Artificial Intelligence

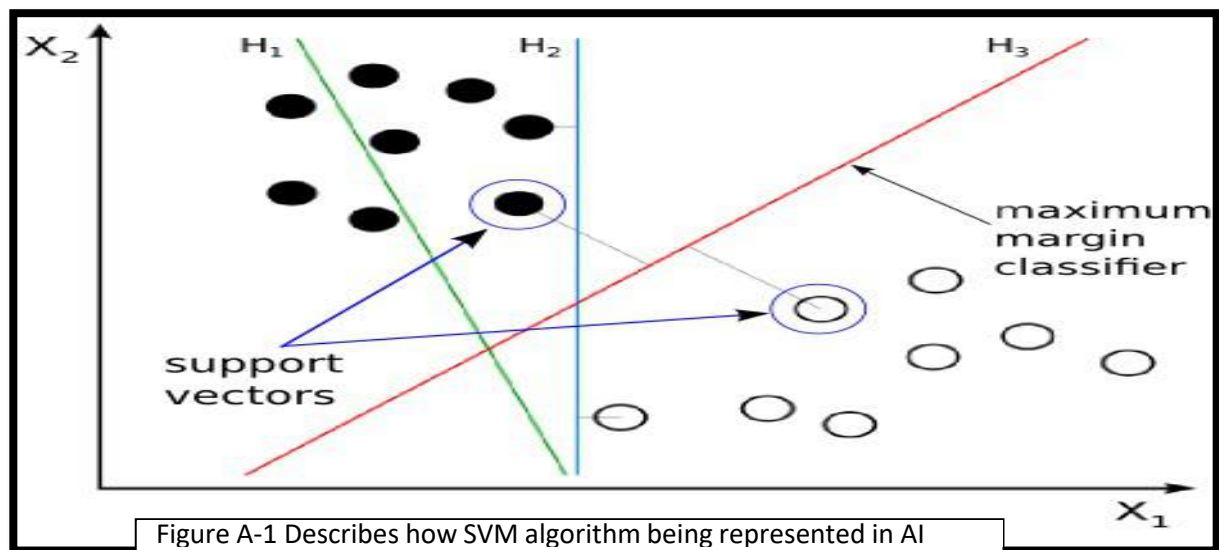
Artificial Intelligence is: the field of study that describe the capability of machine learning just like humans and the ability to respond to certain behaviors also known as (A.I.). The need of Artificial Intelligence is increasing every day. Since AI was first introduced to the market, it has been the reason of the quick change in technology and business fields. Computer scientists are predicting that by 2020, "*85% of customer interactions will be managed without a human*".

Keywords:- Artificial intelligence, Cloud Technologies, Education, Education Applications, Informational Computer Technologies

AI Algorithms and Models

AI is mainly based on algorithms and models as a technique which is designed based on scientific findings such as math, statistics, and biology. AI works based on several models such as: Ant Colony Algorithm, Immune Algorithm, Fuzzy Algorithm, Decision Tree, Genetic Algorithm, Particle Swarm Algorithm, Neural Network, Deep Learning and in this report, I will discuss some of the most known models which are: Support Vector Machine, and the Artificial Neural Network.

- Support Vector Machine (SVM) where it is used to build a classification model by finding an optimal hyperplane based on a set of training examples as shown in (figure A-1). It is also have been used for pattern classification and trend prediction lots of applications for instance: power transformer fault diagnosis, disease diagnosis.



- Artificial Neural Network (ANN) is a representative model of understanding thoughts and behaviors in terms of physical connection between neurons. ANN has been used to solve variety of problems through enabling the machine to build mathematical models to be able to imitate natural activities from brains perspective as shown in (figure A- 2). By using this algorithm, the machine will be able to identify the

solution of any problem just like human's brain.

Some Applications on Artificial Intelligence:

AI can be designed using lots of algorithms. These algorithms help the system to determine the expected response which will basically tell the computer what to expect and work accordingly. Here are some of the greatest AI applications that we are probably using in our daily life without knowing:

- Voice recognition
- Virtual agents:
- Machine learning platform
- Ai optimized hardware
- Decision management
- Deep learning platform
- Bio matters
- Robotic process automation
- Text analytics and NLP
- Adaptive Manufacturing:

AI Design Models

AI application are a lot around us and in this paper, I will discuss some of the most common application of AI that we always use nowadays which is Virtual Assistants such as Siri, Cortana...etc. Over the past few years smart assistants are becoming a very common technology in most of the smart devices and most importantly, that these assistants are getting smarter than ever. In addition to the awesome help they provide us with, is that every one of these apps has unique features. Artificial Intelligence works according to the following phases: getting the data, clean/manipulate/ prepare the data, train model, test data, and improve the data as mentioned in (figure A-3). Before accessing the data, a business must verify the quality of the data to ensure that it meets the requirement.

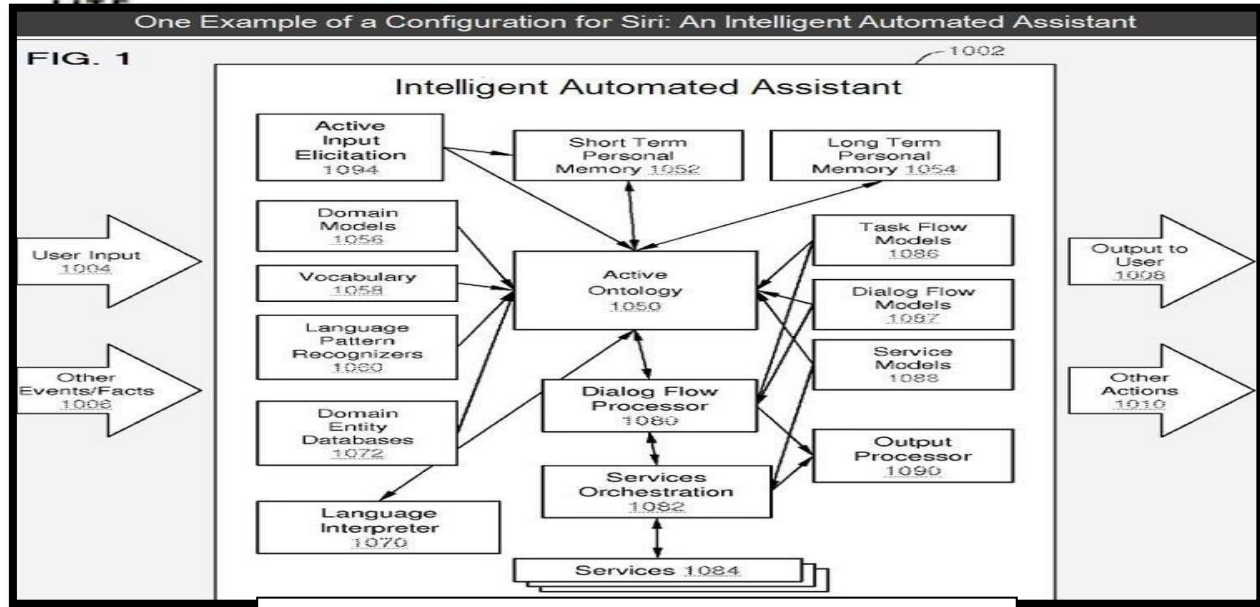


Figure A-3 Describes one Example of configuration for Siri

Siri Virtual Assistant:

Siri is the well-known virtual assistant which uses voice recognitions and typed command in order to perform a certain task within a device. Siri is considered one of AI most used applications. The application simply takes the input from the user such as (e.g. Call dad) and try to find the most related keywords used in this command. Siri tries to eliminate inconsistent result through using the language pattern recognizer and from there to active ontology by searching through the contacts, then it tries to relate the contact named “Dad” and perform the task which is in this case is “Calling” and finally the output of this action will be “calling dad” and to consider all the possible situations.

In another scenario the architecture of the virtual assistant is shown in as we can see the flow of the system starts by taking the input from the user, after that the system decide the conversation strategy module to be used which is a respond from the dialog management module, meanwhile a classification module response to an NLP module. Finally, using the conversation history database is used to analyze the knowledge base construction module which will response back to the domain knowledge based as explained in detail in (figure A- 4)

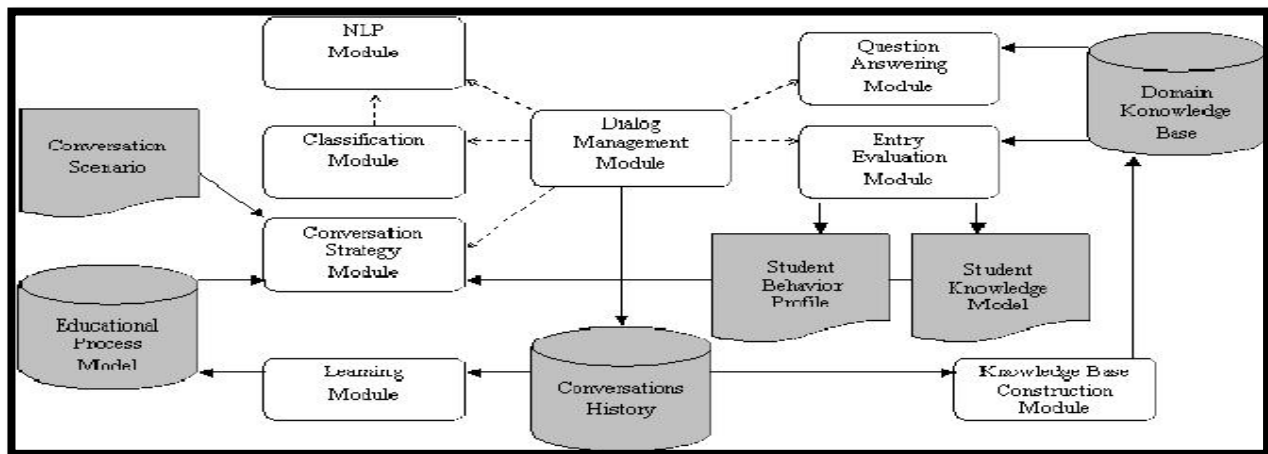


Figure A-4 Describes Proposed conversational agent architecture

Results:-

Widespread use of AI in various fields and everyday life poses the task of mastering the basic skills of its use and understanding the principles of work in the school study. Therefore, the question of defining basic terms is relevant. Transferring the simplest task into terms and analogies available to a particular age group is a separate task. Usually using the terms “artificial intelligence”, “machine learning”, “deep learning”, “neural networks” is often a substitution of concepts. Let’s define these concepts.

Artificial intelligence (AI) is a technological and scientific solution that helps to develop programs similar to the human mind that can think, recognize and self-learn. Machine learning (ML) are methods in the artificial intelligence, algorithms used to teach classification and clustering. It is due to the processing of large data sets and finding patterns in them. Neural networks (NN), Artificial neural networks (ANN) and deep learning works with complex data and fuzzy logic. Deep learning is one of the methods of machine learning. Data science are methods of data analysis for their further processing, sorting, sampling and search. It sets the correlation between data.

Big Data – technologies of working with large data sets. To begin the introduction of the study of artificial intelligence basics, it is necessary to meet the following conditions:

- Setting tasks in terms and analogies that will be clear to a certain age group;
- Selection of tools. It will ensure the task performance and the appropriate level of skills;
- Development of learning course, content and determination of expected learning

outcomes

Modern electronic dictionaries and search engines also use AI to translate text or issue search queries based

on text or images. Some of these tasks can be considered in lessons in the form of simplified tasks. Examples:

Image recognizer. Using the platform, images of any object, such as a toy, are added to the database, and then, by expanding the detection of the human body and objects. It is raised to the camera, and the program detects the toy and names it.

Language recognizer. Design own intelligent chat bot with artificial intelligence. It is possible to create a chat bot that recognizes the language and converts it into text using the language recognition extension, and then accordingly this chat bot answers the questions.

Recognizer of the face or body parts. For example, developing of a visitation system based on face recognition. It can be, for example, a system of automatic door unlocking using face recognition.

Home automation based on artificial intelligence. Control devices with voice commands using artificial intelligence speech recognition technology.

Conclusions and prospects for further research:-

AI nowadays is being implemented in almost every field of study through several models such as SVM and ANN. We should be able to proceed with knowing and understanding the consequences of every technological trend. In my opinion, we are in the AI revelation era and therefore; we should adopt into this change and welcome it too by embracing AI and moving toward a better society.

Technologies are changing and countries are trying to anticipate their development and regulate them by standards. It also forces the economy to move in the extensional direction of development and to look for workers who are knowledgeable in technology and technologically the knowledge formation in fundamental subjects requires a more formalized approach and performance of tasks on large data sets. There are resources allowed to consider the construction and operation of artificial intelligence algorithms.

Their analysis and development of a course for the study of artificial intelligence for adolescents, the purpose of our next research.

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