

## EFFECTIVE INTEGRATION OF ARTIFICIAL INTELLIGENCE IN OUR MODERN SOCIETY

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### ABSTRACT

In recent times, there has been delay of service delivery and slowdown in work done due to the scarcity of human professionals. These professionals in their various fields of study when available are over worked leading to them being tired and confused. The objective of this paper is to proffer effective ways that artificial intelligence could be used to substitute these human experts in their various endeavors. The methodology to be used is the entity event modelling technique of Structured System Analysis and Design Methodology, which involves behavior modelling, identifying and documenting the events affecting entities and the life history in which these events occur. In this case, artificial intelligence is the entity. The result of this paper is the summary of ways to effectively integrate artificial intelligence in the affairs of our modern society.

**Keywords.** *Artificial Intelligence, Algorithm, Expert System, Applications, Human Professional, Knowledge Reasoning*

### INTRODUCTION

Intelligence is the ability to learn and understand (Bundy, 1980). It is the capability of the mind to understand principles, facts and meanings and apply it in practice. AI which fully means artificial intelligence is man-made intelligence or unnatural intelligence mostly exhibited by machines like the computer system and robots. These machines try to imitate an expert human brain in the functions of learning and problem solving (Crevier, 1993). Examples of Activities exhibited by machines include understanding human

speech, competing at a high-level in strategic games like chess, self-driving cars and interpretation of complex data.

The basic aim of AI is to create machines that will behave like human experts in specified fields of study (Hutter, 2005). This can be achieved through;

1. Reasoning
2. Knowledge
3. Planning
4. Learning
5. Natural language processing
6. Perception
7. The ability to move and manipulate objects
8. General intelligence.

AI covers academic fields like computer science, mathematics, psychology, linguistics, philosophy and neuroscience. AI is essential for knowledge deduction, knowledge reasoning and problem solving. AI employs the use of algorithms involving step by step description of actions, to solve probability and economic problems. All these done by machines, thereby allowing humans to rest and focus on new areas to automate (Luger, G. & Stubblefield, 2004). AI helps save cost of employing and maintaining human experts who might be scarce, when machines can easily substitute them. AI removes the time lag taken to become a human expert in a particular field. AI is mostly done by computer scientists who create operating systems for the machines (McCorduck, 2004). They achieve this with the help of experts in mathematics, psychology, linguistics, philosophy, neuroscience and artificial psychology.

AI can be created for any discipline be it either arts or science related. AI can always be employed in any situation when there is scarcity of human experts in the related field and there is need for huge amount of work to be accomplished in a limited period of time (Neapolitan & Jiang, 2012). For

instance, AI in the medical field of pediatrics involves using a personal computer running a particular software that deals with the treatment of children. This software would allow parents choose the signs and symptoms of their children's illness from drop-down menus, thereby narrowing inferences for specified decisions and diagnosis of such illnesses.

### **Examples of Artificial Intelligence**

Examples of AI include autonomous vehicles such as drones and self-driving cars, medical diagnosis, creating art such as poetry, proving mathematical theorems, playing games such as chess or Go, search engines such as Google Search, online assistants like Siri, image recognition in photographs, spam filtering, prediction of judicial decisions, targeting online advertisements and automated customer service systems on the web (Russell & Norvig, 2003). Major publishers of social media sites also use AI technology to post stories more effectively and generate high volume of web traffic for instance most tweets from Tweeter. From the examples of AI technologies above it is obvious that AI could be applied in almost all areas of our society from classroom-education to health-care and even recreation. AI can also be used in areas like banking like automated teller machines (ATMs), in churches for online church services and job recruitment like in online job recruitment sites.

### **History of Artificial Intelligence**

AI started around 1623 with ideas from intellectuals like Gottfried Leibniz and Wilhelm Schickard. They created a calculating machine that performed operations based on concepts rather than on numbers. In the 19<sup>th</sup> century, George Boole and Gottlob Frege developed a notational system for mechanical reasoning using propositional logic or formal reasoning. In 1956, the field of AI research was founded at a conference at Dartmouth College, USA (Nilsson, 1998). The attendees became the leaders of AI research. Their names include John McCarthy, Marvin Minsky, Allen Newell, Arthur Samuel and Herbert Simeon. They and their students wrote programs that enabled computers to

play checkers, solve word problems in algebra, prove logical theorems and speak English. In the 1980s, AI achieved a commercial success with the use of expert systems, that is, software that imitated intelligence of human experts. By 1985, AI was very popular and known in North America, Europe and Asia. In the 1990s, AI became very essential in solving problems of data mining and medical diagnosis. AI also produced an expert system software called Deep Blue which was the first computer chess-playing system to beat a reigning world chess champion, Garry Kasparov on May 11, 1997. By mid 2010s, AI applications were used throughout the world including Africa (Poole; Mackworth; Goebel, 1998). Today, AI applications appear as intelligent personal assistants like Google Assistant and smart phones used throughout Nigeria.

### **Types of Artificial Intelligence**

Types of AI include;

1. Expert systems like Cyc
2. Deep learning frameworks like Chrome browsers
3. Root platforms like Roomba
4. Artificial neural networks like Torch, Theano and Tensor flow.

### **THEORETICAL FRAMEWORK**

#### **Basic Operations of Artificial Intelligence**

For AI to be achieved, some of the following factors must be in place (Rich, 1983);

1. Deduction, reasoning and problem solving
2. Knowledge representation
3. Planning
4. Learning
5. Natural language processing (communication)
6. Perception
7. Motion and manipulation

#### 8. Long-term goals.

Others include approaches, cybernetics and brain, symbolic, sub-symbolic, statistical, classifiers and statistical learning methods, neural networks, control theory, languages, evaluating progress, integrating the approaches, tools, search and optimization, logic and probabilistic methods for uncertain reasoning. All these will be integrated in order to create a human-intelligence-adopting machine.

#### **Application areas of Artificial Intelligence**

AI can be found in not only in modern computers including laptop applications, but also on smart-phone applications. AI can be enjoyed when people browse on the web using their phones to get information and solution to some pressing problems they have through professional answers. AI exists and can be found anywhere modern day computers and embedded systems are installed in our society. Some areas where AI is applied include computer science, marketing, education, finance, hospital & medicine, heavy industry, online & telephone customer service, security, news & publishing, music, aviation, transportation and telecommunication maintenance.

#### **Effective AI integration into the society**

In order to make AI technology more effective in our society, the following should be done;

1. Introduction of affordable electronics devices like smart phones, computers, ATMs and portable device assistants. This can be achieved by allowing the producers of some selected quality electronic devices an open market that is tax-free, thereby cheapening the prices of the quality products.
2. Organization of free educational seminars, conferences and symposiums on how to operate general electronic devices like ATM, personal computers and cell phones. This can be done by non-governmental

agencies in large open areas like stadia or conference halls with the owners of these venues allowing free but timed access of use.

3. Encouraging local computer software programmers through organized competitions and scholarships in order to generate more AI software (Winston, 1984).
4. Ensuring the integration of AI technologies into areas that they are designed for without resistance from professionals in those areas like in banks, hospitals, schools and general business.

### **Factors impeding AI integration**

Some factors hindering effective Artificial Intelligence integration into the society include;

1. High cost of electronic devices and intelligent systems.
2. Lack of electronic device operation know-how.
3. Inaccessibility of some devices like ATMs and PCs.
4. Slow or no wireless internet network.
5. Lack of societal awareness on the subject matter.
6. Laziness of our indigenous software programmers.

### **SUMMARY**

There is delay of service delivery and work slowdown due to the scarcity of human professionals. These professionals in their various fields of study when available are over worked leading to them being tired and confused. This paper achieved its objective of proffering effective ways that artificial intelligence could be used to substitute these human experts of various endeavors in their respective fields. The methodology used is the entity event modelling technique of Structured System Analysis and Design Methodology, which involves behavior modelling, identifying and documenting the events affecting entities and the life history in which these events occur. In this case, artificial intelligence is the entity. The result of this paper is the summary of

ways to effectively integrate artificial intelligence in the affairs of our modern society.

## CONCLUSION

Artificial Intelligence is essential for knowledge deduction, knowledge reasoning and problem solving. AI employs the use of algorithms involving step by step description of actions, to solve probability and economic problems. All these done by machines, thereby allowing humans to rest and focus on new areas to automate (Luger, G. & Stubblefield, 2004). AI helps save cost of employing and maintaining human experts who might be scarce, when machines can easily substitute them. AI removes the time lag taken to become a human expert in a particular field.

## RECOMMENDATION

The government and all stake-holders of the society should ensure that all the factors impeding the effective integration of artificial intelligence in our society are mitigated. Finally, they should ensure that all the ways to integrate AI into our society is voraciously adopted and implemented.

## REFERENCES

- Bundy, A. (1980). *Artificial Intelligence: An Introductory Course* (2nd ed.). Edinburgh University Press, London, UK.
- Crevier, D. (1993). *AI: The Tumultuous Search for Artificial Intelligence*. Basic Books press, New York, USA.
- Hutter, M. (2005). *Universal Artificial Intelligence*. Berlin Springer press, Berlin, Germany.
- Luger, G. &Stubblefield, W. (2004). *Artificial Intelligence: Structures and Strategies for Complex Problem Solving* (5th ed.). Benjamin Cummings press, New York, USA.

- McCorduck, P. (2004). *Machines Who Think* (2nd ed.). A. K. Peters press, New York, USA.
- Neapolitan, R. & Jiang, X. (2012). *Contemporary Artificial Intelligence*. Chapman & Hall/CRC press, London, UK.
- Nilsson, N. (1998). *Artificial Intelligence: A New Synthesis*. Morgan Kaufmann publishers, New York, USA.
- Poole, D.; Mackworth, A.; Goebel, R. (1998). *Computational Intelligence: A Logical Approach*. Oxford University Press, New York, USA.
- Rich, E. (1983). *Artificial Intelligence*. McGraw-Hill publishers, Washington, USA.
- Russell, S. & Norvig, P. (2003). *Artificial Intelligence: A Modern Approach* (2nd ed.), Upper Saddle River press, New Jersey, USA.
- Winston, P. (1984). *Artificial Intelligence*. Reading. Addison-Wesley press, Tennessee, USA.

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