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Revista de Antropología, Ciencias de la Comunicación y de la Información, Filosofía, Lingüística y Semiótica, Problemas del Desarrollo, la Ciencia y la Tecnología

Año 35, 2019, Especial N° 20
Revista de Ciencias Humanas y Sociales
ISSN 1012-1587/ ISSNe: 2477-9385
Depósito Legal pp 198402ZU45

Universidad del Zulia
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Maracaibo - Venezuela

Opcion, Año 35, Nº Especial 20 (2019):*2899-2921*
ISSN 1012-1587/ISSNe: 2477-9385

The importance of Usage the Artificial Intelligence Applications in Industrial Organization

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Abstract
The rapid technology advancing in world Impose on the plants the strive to adopting or relying on the modern technologies in order to Keep up with the developments , and eventually to achievement beneficial & gain advantages , and improve the position & reputation among the competitive industries . Among the prominent challenging that encountered industry plant is emerging the intelligent devices , machines , & equipments that gained the industry more from excellent advantages & characteristics , this is what called " Artificial Intelligence " . this paper attempts to introduction concept of AI , main its components , & areas its applications . measure the degree of availability & ready the field under research to accommodation or encompass like this technique .

Keywods: Artificial Intelligence, business, Industrial Organization.

La Importancia Del Uso De Las Aplicaciones De Inteligencia Artificial En La Organización Industrial

Resumen
La rápida tecnología que avanza en el mundo Impone a las plantas el esfuerzo de adoptar o confiar en las tecnologías modernas para mantenerse al día con los desarrollos y, finalmente, lograr beneficios beneficiosos y obtener ventajas, y mejorar la posición y reputación entre las industrias competitivas. Entre los desafíos más importantes que encontró la planta de la industria están surgiendo los dispositivos, máquinas y equipos inteligentes que le dieron a la industria más ventajas y características excelentes, esto es lo que se llama "inteligencia artificial". Este documento intenta introducir el concepto de IA, sus componentes principales y sus aplicaciones. mida el grado de disponibilidad y prepare el campo bajo investigación para acomodarse o abarcar como esta técnica.

Palabras clave: inteligencia artificial, negocios, organización industrial.

1. INTRODUCTION

Every organization , irrespective of the business in which it operates, depends on the knowledge and skills of its employees . knowledge workers make up a critical resource . the output of knowledge is reflected in many ways . for example , a new idea for a product or an elegant solution to a nagging problem or a new approach to a procedure . therefore, knowledge must be preserved , protected , enhanced , consolidated , and coordinated . it must be preserved so that it is not lost when an employee leaves the organization , it should be protected from competitors if an organization is to succeed in the long run . the organization must make all efforts to enhance its knowledge in order to sustain in the mark place. knowledge consolidation is the integration of knowledge from a variety of experts . knowledge from different sources must be coordinated , particularly for companies having world- wide network , this task become more and more challenging .

the technologies that assist in the handling of knowledge are a broadly referred to as artificial intelligence (ai) . a broad overview of artificial intelligence and more detailed view of its two branches – expert systems and neural networks .

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2.Research objectives

Research objectives :the research aimed to achieve the following :
1.Introduction the workers in field with conceptual framework to artificial intelligence .
2.Let attention the employees in research field to the advantages and benefits that coming from artificial intelligence .
3.Encourage the research plant to adopting this modern technique .
4.Measure the level of understanding & awareness the research field to artificial intelligence . Page Layout
An easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it.

3.Problem statement
As that known, that the applications of artificial intelligence in variety areas contribute in perform the works in easily & precisely , as well as they have abilities to work in environment conditions are very difficult such as very hot or cold , that human can not did . so , we can determine the problem in following questions :
1.Did the plant employees have good , and clear ideas about artificial intelligence , its applications , & its advantages .
2.Non-attention the research field with applications of artificial intelligence .
3.The causes the plant do not caring with applied the artificial intelligence for getting the more competitive advantages .

3. History of AI
The first term of industrial intelligence was mentioned in (John McCarthy's) lecture as the subject of a conference held at Dartmouth College of Computer Science capable of human work. In the same year he announced the first industrial intelligence program of the computer called theoretical and encouraged the limited ability of the logical Theorist of thinking (eg,) For researchers to develop another program called General Problem Solver(GPS). (Ralph , & George , 2008:437) .

Conceptual framework:
Artificial intelligence : "Part of the science of computers, which is concerned with smart computer systems, those systems that have the characteristics associated with intelligence and decision-making and somewhat

similar of human behavior in this area in terms of languages, learning, thinking, problem solving, etc.(Amous,2007:9).

Artificial intelligence : as computer-based solutions to the most complex problems through practical processes analogous to human inference..(Ahmad ,2007:274) .

Artificial intelligence (AI) A way to study ways of simulating cognitive functions in the human brain by computer, ie, to make machines simulate and symmetry thinking and human behavior.

(Stephen , & maeve , 2006 : 429) .

Artificial intelligence (AI) Science from the latest computer science: Technology is linked to several other sciences aimed at providing computers and machines capable of simulating the processes of intelligence in the human mind and thus the ability to solve problems and make the most complex decisions in the same way human method as reasoning, reasoning, learning and the ability to modify in addition to thinking and vision and walking Talk and sensation. as summarized in table(1)

Table(1) Behavioral Artificial intelligence

• Think and reason .
• Use reason to solve problems .
• Learn and understand from experience .
• Acquire and apply knowledge .
• Exhibit creativity and imagination .
• Deal with complex or perplexing situations .
• Respond quickly and successfully to new situations .
• Recognize the relative importance of elements in a situation .
• Handle ambiguous , incomplete, or erroneous information .

Source : James A. Brien , (2000) , introduction to information systems : essential for the internet worked enterprise , 9thed. , Irwin McGraw-Hill , Boston .p312

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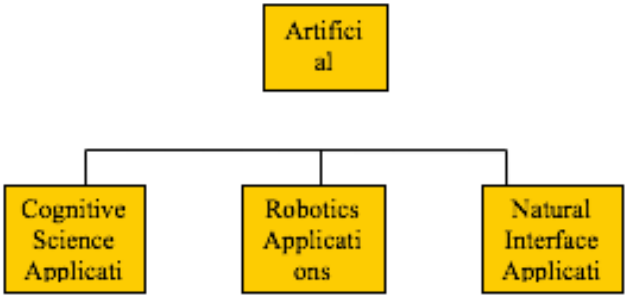
The domains of artificial intelligence: Figure 1 shows the main areas of artificial intelligence as they can be grouped into three main groups: cognitive science, robotics, and natural interface.



- Expert systems	-Visual perception	- Natural Language
- Learning systems	- Tactility	- Speech Recognition
- Fuzzy logic	- Dexterity	- Multi sensory interface
- Genetic algorithms	- Locomotion	- Virtually Reality
- Neutral networks	- Navigation	
- Intelligent Agents		

Figure 1 : The major application areas of AI
Source : James A. O'Brien , (2000) , introduction to information systems : essential for the internet worked enterprise , 9thed. , Irwin McGraw-Hill , Boston .p312

The elements of AI : Most writers agree that the main elements of artificial intelligence are:
Expert systems , Neural networks , Fuzzy logic , Genetic algorithms , Intelligent agents.(Kenneth,&Jane2009:346-352) and (Turba&Aronson2001:402)and(Stephen&maeve,2006:142)

First - Expert system (ES) a program designed to serve tasks related to human experience. The expert system tries to carry out processes that are usually considered to be human and involve judgment and decision-making.
The expert's speech is derived from experience. He is an experienced person who has undergone many experiments and has refined his understanding of a range of fields. He has enriched the idea of information that is unique to him, and distinguished him from his peers from the specialists in the field. Expert systems aim to develop accounting programs that can

analyze events and situations in a range of areas and reach the same conclusions or findings as the expert. (Husseini, 2002: 72)

The term "expert systems" consists of two parts: the first is systems, which is a collection of the word system, which represents the group of interconnected parts that collect, process, store and distribute information to assist in the control and decision-making processes within the enterprise.
(Laudon, 2010, p.46)

The second part (expert) is that these systems have the experience and the deep knowledge accumulated over time and experience with the facts, rules and procedures in the scope of a particular work. (Abd alnoor, 2005, p.269)

The expert systems distinguish the traditional systems that the person who uses not necessarily be proficient in the use of the computer as the process of use begins to guide the user question to the expert system and the system in turn to direct the user's queries and so repeat this process until a proper solution of the problem and The system then provides the necessary justifications and explanations that explain why this solution was chosen from the base and the associated information movement (Ralph, & George, 2006, p.448)

The expert system consists of 5 main parts:
(Kroenke,& Hatch , 1994 ,P747)

A/Knowledge base: Knowledge Base The knowledge base of the expert system includes data, knowledge, relationships, principles and decision making rules used by the expert to solve a particular type of problem. The success of the expert system in achieving its objectives depends greatly on the large knowledge base. It is often better to rely on one expert to solve the problem

B/Inference engine: Is a program that contains logic and deductive logic that simulate the mechanism of the expert's work and logic when advising and interpolating the problem to be solved. The inference engine uses the data obtained from the knowledge base at the system building stage to carry out the conclusion process, formulate the results and present the proposed results.

C/User interface: The devices that enable design, build, update, use, and communicate with expert system. These devices are keyboard - screen - scanner.

The terminals are used by the end-user of the expert system, who enters queries to obtain the results.

D/: Explanation Facilities: The means of clarification of the advantages

of the systems expert from other traditional systems, it shows the end user how to reach the solutions proposed as a kind of contribution to build the user's conviction that the solutions that have been reached are the best or most appropriate options.

E:/Knowledge Acquisition Facilities: This requires the efforts of two main parties, the first expert and the knowledge and expertise in the field of competence and the second is the knowledge engineer, which works to convert human experience into a language can be programmed on the expert system on the one hand and language understood by the end user of the system on the other hand.

The structure of a generic expert system is summarized in figure (2).

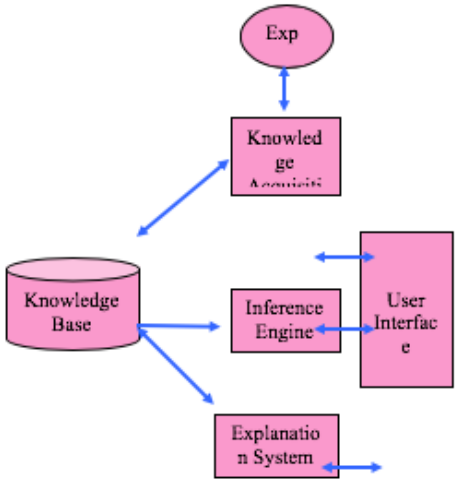


Figure 2.Structure of an Expert System Shell

Source : Kroenke,& Hatch , (1994) , Management Information Systems , 3rded., McGraw-Hill , Inc., New York .p747 .

Second - Neural networks : Is a system of data processing simulated and similar to the way the natural neural networks of the human or the organism, the human nervous system.

(Munisha , etal. , 2011: 159) .

A neural networks are one of the most important areas of artificial intelligence, which reflects a significant evolution in thinking the idea of neural networks revolves around simulating the human mind using the computer and is practical simulations by solving the problems they face, through

self-learning processes based on experience stored in the network that achieves the best results. (Stephen , & maeve , 2006 : 148) .

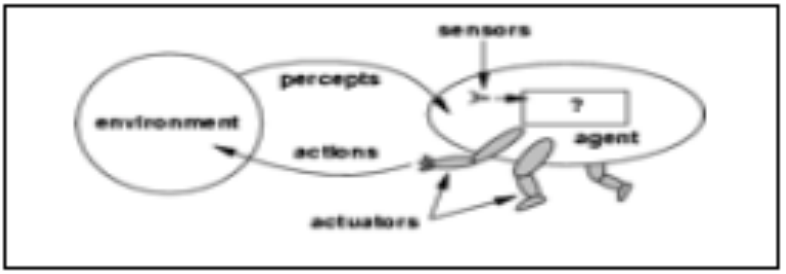
Third - Fuzzy logic : This logic originated in 1965 by the Azerbaijani scientist Lutfi Zada of the University of California, where he developed it to be used as a better method of data processing. However, his theory was accepted only after 1974,
1- Organizing a steam engine,
2. Fabrication of fuzzy logic chip
3 - used in the cameras
a system of data processing simulated and similar to the way the natural neural networks of the human or the organism, the human nervous system.
The difference between the concept of logical fog and the traditional classical concept of logic is that the classical concept is based only on the values (0 and 1), in order to infer the unconscionable conditions without looking at the other relations existing, while the logical ambiguity takes these relations into account, with the possibility of characterizing and presenting solutions, (Chen&Pham,2001:P57)

Forth - Genetic algorithms The Genetic Algorithms are a method of scientific research, finding the best solution and fall under the applications of artificial intelligence. They are also classified as one of the methods of evolutionary algorithms that depend on the tradition of nature. It has been described in genetics because of its strong reliance on simulating the work of genetics in living organisms and its utilization of the concept of parallel processing to arrive at the optimal solution.
Genetic algorithm is one of the most important tools of artificial intelligence, since the program of the genetic algorithm is characterized by the characteristics of the program is intelligent (thinking, conclusion and learning) and this is what the smart program differs from other traditional programs.
Genetic algorithms are an important technique in the search for the best option of a set of solutions available for a specific design. Genetic manipulation passes the optimal advantages through successive breeding processes and strengthens these traits. These traits have the greatest ability to enter breeding, produce an optimal generation, By repeating the genetic cycle, the quality of the seed gradually improves.
Genetic algorithms exist in bioinformatics, computer science, engineering, economics, chemistry, manufacturing, mathematics, physics and other

fields. (Kenneth , & jane 2009 : 346-352)
The mechanism of the genetic algorithm starts with the choice of the data set. The data are often represented in binary figures. We also calculate the fitness function for each chromosome, which is the function of evaluating the intermediate and final results. The basic stages of the algorithm are as follows:
(Stephen , & maeve , 2006 : 150) .
1. Selection: The process of selecting the best individuals based on the optimization function.
2. Crossover: The process of generating a new generation through the mating of the best individuals that have been chosen. This process is often carried out by the exchange of half-representation between parents.
3. Mutation: It is the process of changing some of the characteristics of the generation resulting from the hybridization process in order to improve it. It is often done by changing the value of one bit or changing the location with another.
The algorithm ends with the evaluation of the new generation based on the optimization function and the decision to repeat the above basic processes or accept the results of the interim and to be satisfied and according to the requirements of the solution.
Genetic algorithms are useful and effective when the research space is large or complex or it is difficult to use traditional research methods to solve the problem and this has proved to be a great success in many areas and spread use.

Fifth - Intelligent agents : Agent can be defined as an object that can perceive the field by sensors affects the field by effects effectors. (Ali 2012:17). Thus, a Intelligent agents is a computer unit that is capable of acting in the specific environment of the perception and behavior in events and interaction in this environment.
(Makkithaya &etal ,2008:6)
The intelligent agent is n independent organism (whether natural as human or computer) exists in a specific environment and acts in a rational manner, and the meaning of mentalist depends on the environment, for example, does the agent work to find a solution the question of whether or not it protects itself from other beings.(Ali 2012:17).

Figure (3) illustrates the idea of the customer's work in a simplified manner.



Figure(3)Customer's Work
Sources:Martin Rehak, Michal Pechoucek, Pavel Celeda, Vojtech Krmicek, Martin Grill, Karel Bartos "Multi-Agent Approach to Network Intrusion Detection" May 2008,p8

In order for the agent to be intelligent, he must have three basic characteristics:(Michael,2002:22)
1- Interaction: It is the ability of the agent to know his environment and deal with it at intervals according to the changes that occur in it, and this property means that the smart agent has the ability to interact with all the changes that occur in the environment.
2- Modulation: the agent's ability to deal by the behavior directed and change the situation and change the course of events according to the state of the system to achieve the best results.
3-Social: It is the ability of the agent to connect himself with the large environment containing a number of agents by exchanging messages to achieve their purposes.

Sixth – Robotics : It is a machine that has the ability to do pre-programmed work, either by direct instruction and control by humans or by software programs. The work of the robot on its performance is often arduous, dangerous or precise, such as searching for mines and disposing of radioactive waste, or precise or arduous industrial work. (Stephen , & maeve , 2006: 141).Intelligent Robot this class is an advanced level of robots that are controlled by computer. In this category, the robot has the ability to understand the environment around

it, and then perform the work required of it changing conditions in the work environment. The main components of these robots are:
1-Unit system (for distance determination) 2-system cameras 3-sensor system 4-arm 5-hand grip(touch) 6-system generate sounds 7-system speech generation.(James A. O'Brien,2000: 314).

5-study

Benefits of Artificial Intelligence :
The following are some of the benefits that can be achieved by applying artificial intelligence:(Munisha , etal. , 2011: 158) (Turban et al, 2011, P.561); (laudon & laudon, 2010,p458)
1. High productivity
2. Speed in completing the work
3. Precision in production
4. Stability in quality level
4. Working in hazardous conditions
5. Multi-tasking (ease of programming)
6-To meet the needs of manpower shortage.
7- Repetitive jobs that are boring, stressful, or labor-intensive for humans.
8- Ability to work under incomplete or uncertain data.

Applications of AI
Applications or areas of use of artificial intelligence areas of robot use: (Munisha , etal. , 2011: 160) :
1-Industry: Assembling cars and electronic devices in production lines, and chemical industry.
2-Agriculture Technology : Control irrigation of crops and reaping fruits.

Variables	Yes		NO	
	Frequency	%	frequency	%
First - Expert system (ES)				
X1	10	27.0	27	73.0
X2	13	35.1	24	64.9
X3	13	35.1	24	64.9
Second - Neural networks				
X4	4	19.8	33	89.2
X5	2	5.4	35	94.6
X6	10	27.0	27	73.0
Third - Fuzzy logic				
X7	8	21.6	29	78.4
X8	13	35.1	24	64.9
X9	17	45.9	20	54.1
Forth - Genetic algorithms				
X10	4	10.8	33	89.2
X11	10	27.0	27	73.0
X12	12	32.4	25	67.6
Fifth - Intelligent agents				
X13	7	18.9	30	81.1
X14	15	40.5	22	59.5
X15	12	32.4	25	67.6
Sixth - Robotics				
X16	8	21.6	29	78.4
X17	7	18.9	30	81.1
X18	4	10.8	33	89.2

Tablet (2)
Frequencies , percentages of research variables

3-Medicine: Perform surgeries where they are directed by a doctor remotely.
4-Service: Providing various services to individuals in restaurants, homes and institutions.
5-Space: Planetary exploration and satellite maintenance.
6-Security and safety: dismantling suspicious objects and handling hazardous materials.
7- Military field(Battlefield& Air force Management)
8-Entertainment and sport
9-In education in terms of carrying out the tasks of the teacher and provide advice in the field of education.
10-Geological Prospecting.
12-Computer Technology.
13-Production Planning &Scheduling.
14-NuclearTechnology.
15-Law.

6-Analyzing the data and interpret the results :
The pioneer company for industry and medical appliances Sulaymaniyah governorate selected as a research field , where the questionnaire form distributed on the employees they are working in the departments such as the planning and informative , the design and engineering the production ,the marketing as a research sampling . the tablet (1) show the results that getting on from the checklist form after analyzing it , where the checklist content questions about every component from components of IA .

Size of sample N = 37

We can notify through the tablet that the first component named expert systems gained on average responses percentage reached (32.4) about the research field have and used this component of IA , while the average of non-have and use this technology reached (67.8) .
The results of tablet indication the second component that called

neural networks getting on agreement average reached (17.4) and this percentage is not high , whilst percentage agreement on non-found this technology at field under research was high (82.6) .
The tablet also shown that the research field not have the component named Fuzzy logic in high degree where the average reached (34.2) . while the great percentage related to non-have this technology reached (65.8) .
the forth component (Genetic algorithms) getting average percentage of agreement by the respondents about using this component at institute that reached(23.4) and this percent of course is very little . whilst, the agreement by the respondents about non-have this element is very high (76.6) that is mean not depend on this element to solve the problem at institute .
where achieve percentage of agreement by the respondents reached (30.6) . this percent not high in related to percent of agreement about non-apply this technology at their institute where reached (69.4) .
Lastly, we see the six element of IA that called (17.1) and this percent very little and indicate to the institute not using this technology . against this we watch the percent of agreement on the non-applying is very high that reached (82.9) .

6- Conclusions :
From the results that are exposed we can concluded . in generally , all the elements of artificially intelligence achieved percent of agreement very lowered . specially , neural networks , and robotics. And the rest elements of IA achieved percent of agreement higher little like , expert systems , and fuzzy logic .all these percent not satisfactory.at last. The researchers advice the field under research to make more efforts in order to adopting and applying these applications of IA because these elements achieving more benefices for the organization and people and achieving more competitive advantages against the competitors

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Revista de Ciencias Humanas y Sociales

Año 35, N° 20, (2019)

Esta revista fue editada en formato digital por el personal de la Oficina de Publicaciones Científicas de la Facultad Experimental de Ciencias, Universidad del Zulia.
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