

Artificial Intelligence and Expert Systems: Its Emerging Interaction and Importance in Information Science - An overview

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Abstract - This paper mainly deals with overview of artificial intelligence and Expert System. Artificial Intelligence primarily responsible for developing computer programs which are able to read, speak, and understand as like man. Other hand Expert System refers to expert System needed for advance decision and intelligence robotics application. Expert System can communicate with user in their natural language and processes the capacity to catch to the individual desire. Here in this paper role of Artificial Intelligence and Expert System elaborate briefly, where as application of these computer techniques get most priority. We also discuss the need of Artificial Intelligence and emerging Expert System in the working and academic field of information Science.

Keywords : Expert System, Artificial Intelligence, Contemporary Issue, AI, Information Science, Information and Documentation Centre

I. INTRODUCTION

Artificial Intelligence is an interdisciplinary study and practice area which is mainly deals with intelligence, knowledge base system, and reasoning expertise so on. Fundamentally Artificial refers to not natural other hand intelligence refers to ability of reasoning, perception and so on [10]. Artificial Intelligence is actually a study of computer systems which is more efficient and Intelligent which can understand natural language and respond like a man or human being. Expert System is other hand a field of Artificial Intelligence which is mainly focused on developing machines for solving problems and has the ability to understand human thinking and cognition are explained in figure 1. Information Science is mainly dedicated to collect, select, organized and dissemination of knowledge and Information there is a else relationship in between AI and ES with information Science for advancement and improvement of information activities. The CAS, SDI, INDEXING, Classification –these traditional

growing area as well as emerging area of Information Science highly associated with Artificial Intelligence and Expert System fundamentally [5,10].

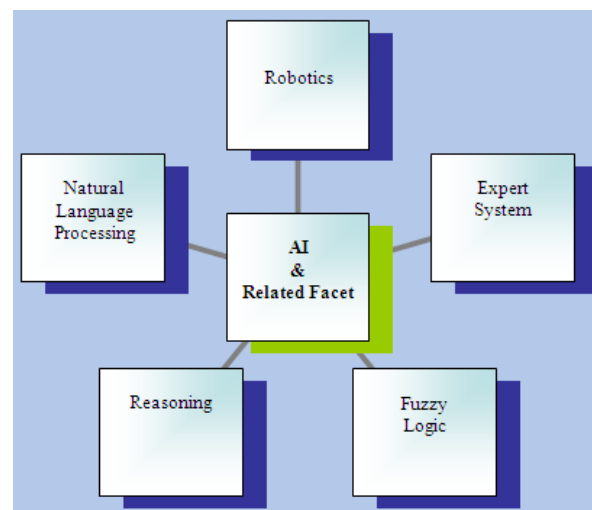


Fig. 1 AI & Related Area

I. OBJECTIVES OF THE STUDY

The main aim of research regarding of this topic like-

1. To know the basic about Artificial Intelligence and Expert System.
2. To know origin and development of the Artificial Intelligence as well as Expert System.
3. To know about Information Science and its integration with AI and ES.
4. To know the characteristics and Importance of Artificial Intelligence and related field.
5. To know the basic things where application of Artificial Intelligence and Expert System is possible in information Activities.
6. To know basic about information and Documentation Centre.

III. METHODOLOGY

For this research work various methods and tools were considered and used. To know the fundamental and evaluation of AI and ES; we analyzed and used historical method [4]. To learn latest about the AI and ES, literature review considered as valuable source. However to analyze the contemporary importance of AI and ES in the field of Information Science, we prepare the questionnaire and send that to the concerned subject expert. The figure 2 shows the creation of AI. We also analyze the role of information System and its contemporary integration with robotics and Artificial Intelligence.

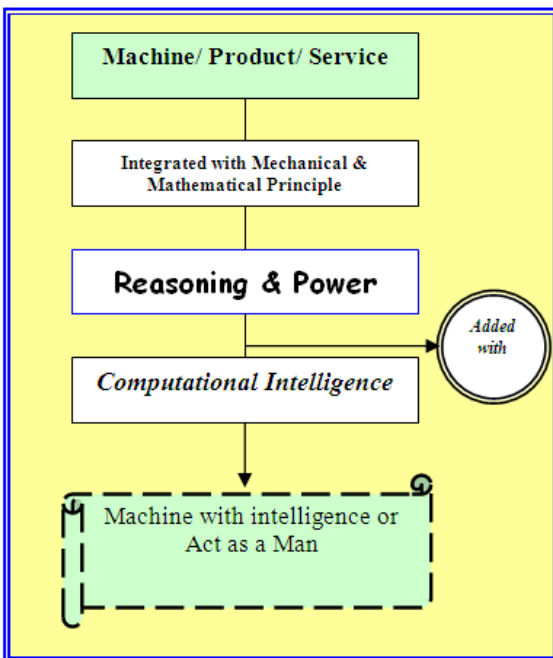


Fig. 2 Creation of AI

IV. ARTIFICIAL INTELLIGENCE: AN OVERVIEW

As P. K. Panigrahi define branch of Computer Science concerned with the study can creation of computer Systems that exhibit some form of Intelligence with the ability to learn new concept and tasks, to reason and draw useful conclusion about the world, and to understand a natural language. Virtually it is an attempt to make computers act like a human being, this is also consider as science of designing and modeling of human intelligence system. There are so many areas where Artificial Intelligence can be applied such as:

- Natural language processing; Expert System
- Automatic programming; Robotics
- Image processing and computer vision
- Theorem proving and so on.

Fundamentally Artificial Intelligence can be applied in so many areas like – Air conditioning, robot, cars, aero plane, industry for automation [9, 10].

V. AI: BASIC AND CONTEMPORARY CHARACTERISTICS

We can see the following characteristics of Artificial Intelligence:

- Process of simulation of human intelligence on a machine.
- AI deals with various kind of knowledge representation scheme.
- Actively engaged in simulation, identification, computation and production of knowledge.
- It is actually ability of a computer to resolve uncertainly through whatever process it has available to in.
- This is an advance computer programme which can read, speak and understand language.
- It is possible to better language understanding and computer vision through the AI.
- The main component of Artificial Intelligence is Robotics, Memory Organization, Knowledge Representation, learning modules, storage and recall, interface techniques and so on.

VI. EXPERT SYSTEM AND ITS FEATURES: CONTEMPORARY OVERVIEW

Expert System is actually consider as branch of Artificial Intelligence; directly and indirectly. Expert System is related with computer science, information technology, electronics, cognitive science and others. Expert System first developed in 1970 as an advance field of AI. Practically Expert System can solve different problems better than human expert. Some of the characteristics of ES is including:-

- Expert System use symbolic, logic and heuristics rules of thumb and solution.
- It is permanent, consistent, and easy to transfer a document with much cheaper cost.
- It can provide answer or task as soon as possible.

VII. APPLICATION OF ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM IN INFORMATION SCIENCE FIELD

Artificial Intelligence helps many ways to the industry, services and society [10]. The main objective and application of AI and Expert System include:

- It is directly as well as indirectly helps in decision making, short range planning to long range planning.
- Personnel with little expertise can solve problem with Expert System and AI.
- With the help of AI and Expert System it is possible to combined human expert in one way or system.
- Expert System is useful in monotonous operations.
- Helps to design and develop automatic car, aero plane and helicopter.
- The e-mail, e-commerce and mobile phone can be benefited by the Expert System.
- Different types of medical diagnosis are possible with the help of AI and Expert System.
- In space science and technology Expert System is widely used.
- Expert system can answer questions and solve problems.
- Huge numbers of complex thing are possible through the Expert System.
- The air conditioning system, mobile alert systems may get benefited from AI and Expert System.
- Huge number of railway transformation task is possible through the Expert System.

- AI and ES are applicable in Information design, Information Marketing and so on.
- AI and ES can also be applicable in both online and offline catalogue.
- The Machine Readable Cataloguing has some intelligence, that it can recognize the rules of AACR-II.
- For classification of document AI and ES application is possible.
- For collection development, particularly during old book discard, yes or no; it is useful.

VIII. INFORMATION SCIENCE: ADVANCE CHARACTERISTICS AND NEED OF AI AND ES INTEGRATION

Information science is one of the important subjects responsible for social changes [8]. Information science is the interdisciplinary subject which has close relationship with computer science, management science, information technology, psychology, documentation science and so on [9]. The main aim of information science is collection, selection, organization, management and dissemination. The general application of AI is shown in figure 3, so in several information science areas artificial intelligence and Expert System is possible

- In management information system (MIS), application of Expert System and AI is possible.
- AI and ES can utilize in current awareness services and SDI.
- In indexing and auto abstracting application of AI and ES is possible.
- Machine and equipment of information centre and system like- printer, fax, computer and other can be used with AI and ES.

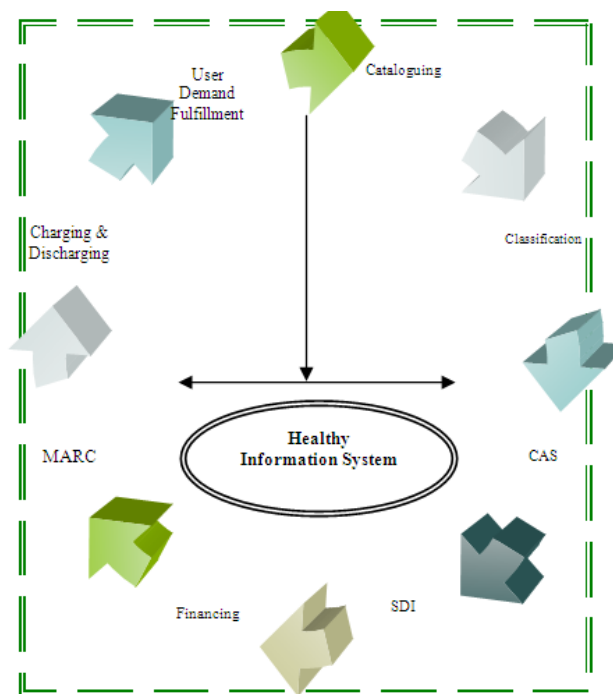


Fig: 3 General Application of AI in Information Science Practicing

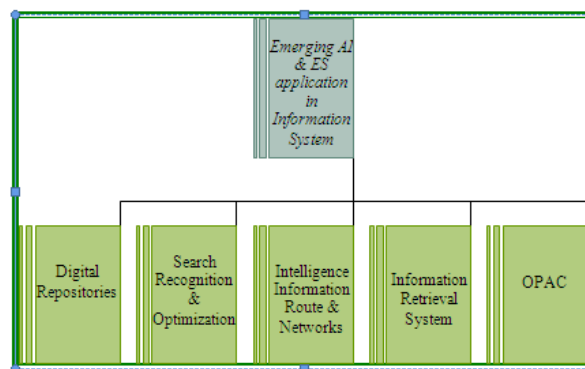


Fig: 4 Emerging AI & ES application in advance Information Science practicing field

IX. IRS and AI

The entire Information Retrieval System (IRS) as well as information system has great relationship [10] with Artificial Intelligence and Expert System is shown in figure 4. The search engine like-online Google (it is also an information system) or offline interface for bibliographical data retrieval, so much associated with Artificial Intelligence and Expert System. Some of the area where contemporary Artificial Intelligence and Expert System may be applicable:

- Machine Readable Cataloguing;
- Search Engine of Digital Repositories;
- Speak Reorganization;
- To design information and computer networks;
- Modeling and designing of information systems;
- AI may be helpful for providing information as per user need with the matching profile of user's earlier demand.

X. ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM: FUTURE TRENDS IN INFORMATION SYSTEMS

Apart from earlier discussed area, artificial intelligence can be applied for the following cases:-

- For information centre or related foundation AI and ES may be useful especially for complex problem like-financial management, staffing, allocation of resources and human resource.
- For cost benefit analysis, more clearly the entire budget of an information centre or system AI and ES based ERP software may be helpful.
- For hiring and promoting staff and staff related online advertisement it can play an important role. Apart from this, during recruitment of staff for preparation of job description and proper utilization of staff AI and ES no doubt helpful [7, 8].

XI. FINDINGS

- AI and Es both are equally important and depend on each other.
- Artificial Intelligence and Expert System today consider as Mechanical Engineering rather than Computer Science.
- For the design of technical processing and other section Artificial Intelligence and Expert System may be helpful.

- Many Artificial Intelligence and Expert System based ERP packages are today available in the open market.
- IRS and Digital Repositories have most significant relationship with Artificial Intelligence and Expert System.

XII. SUGGESTION

- The traditional Information Science programme needs practical orientation of Artificial Intelligence and Expert System.
- The references service may be provided by the Artificial Intelligence and Expert System based systems.
- Usability Engineering and HCI can play an important role intelligent interface design.

XIII. FURTHER RESEARCH

Some of the area where further research work is possible like-

- Application of Artificial Intelligence and Expert System in the classification system.
- Artificial Intelligence dependent multimedia information system.
- Application of intelligence system in Information Science working area like- Social Networking.

XIV. CONCLUSION

There are several fourth coming areas where we can use Artificial Intelligence and related fields. For proper information architecture we can take the help of intelligent agent of artificial intelligence. Both types of expert system deterministic expert system as well as stochastic expert system have great impact or role in information activities.

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