



**UTILIZATION OF LIBRARY SERVICES IN ACADEMIC
LIBRARIES THROUGH APPLICATIONS OF ARTIFICIAL
INTELLIGENCE: AN OVERVIEW**

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Abstract:

In this paper an attempt has been made to bring Artificial Intelligence and its significance in Academic Libraries. The AI based Library services and its applications to the Students, Research Scholars, Faculty Members and Library staff in academic Libraries. This research paper also discussed about AI advantages and challenges in academic Libraries.

Key words: *Artificial Intelligence, Robots, Technology, Expert systems, Academic Libraries, SDI, Services*

Introduction:

In this Digital era robotics are introducing in every field to providing uninterrupted quality services to the users. Information technology and Artificial Intelligence are vastly developing areas in this present scenario. The main objective of Library is to disseminate the information or knowledge to the library users. To provide the uninterrupted library services to the users, we have to introduce the Artificial Intelligence technology in the Libraries. It will help or assist to the Students, Research Scholars, Faculty Members and Library staff. In this present

scenario, there are many AI tools are available in the market ex: ChatGPT, Google Bard, Copy AI, Midjourney, Tome.app, Kaiber, etc.

Applications of Artificial Intelligence in the Libraries:

Artificial Intelligence mainly focuses on understanding and performing intelligent tasks. It is concerned with the concept and methods of symbolic inferences by computer and symbolic representation of knowledge to be used in making inferences. Popular Artificial Intelligence programs are the Expert

systems, which are computer programs that embody human mention of Artificial Intelligence which creates vision of electro-mechanical devices to perform human instructions. The following are AI applications in academic Libraries.

Assist the users in Libraries:

AI based Humanoid Robots will assist the users by guiding the Library information. It will help the users to find out about the Library Books information, periodicals information, electronic resources information, etc. These will help to find out the exact location of the particular Book's rack no, shelf no etc. It is also perform as OPAC itself for the users. AI will create a user friendly environment in the Library. Physically challenged people will get help through this system.

Self Check-in & Check-out:

In the traditional Library services, Circulation staff supposes to be Issue the books and they only have to take back the books from the users. It will be in a specific time period. With AI machines, Readers can issue the books by their own and they can submit the books to the Library whenever they want to submit. Self checkout machines will help out the users, which will work based on the AI technology. Users can renewal the Library

books too. It will be served 24/7*365 days to the users. *RFID technology* will monitor this process by the support of AI technology. So users no need to wait for any Library staff.

Reference services through AI:

To provide reference services to the users is the basic function of the Library. Expert system will work as a substitute for a reference librarian. AI work as advisory system to locating the reference resources and factual data. *Pointer*: It is successful working application of computer system in the area of reference work. It directs the users to the reference sources. *Online Reference Assistance (ORA)*: ORA consist of directional transactions like library locations, services and polices. A Video text like database, computer assisted instruction modules and knowledge based system. *AMSWERMAN*: It's a knowledge based system to help users for reference questions on agriculture topics. *PLEXUS*: It's a referral tool used in Public Libraries. It includes the reference process, information retrieval about certain subject areas and for locating reference source books and factual data.

AI in Cataloguing:

Automate cataloguing through expert systems have focused on descriptive

cataloguing which is based on AACR2. There are two ways to apply the AI techniques in cataloguing. (i) *An Expert System* with full cataloguing capabilities associated with electronic publishing system. The cataloguing text will generate online, it can be passed through a Knowledge-based system. (ii) *Human-Machine Interfaces (HMI)*: In this intellectual work is divided between the intermediary and the support system. Thus, we can make use of AI applications in Cataloguing process.

AI in Classification:

Classification is the basic activity of every individual Library. The application of *expert systems (AI)* in the field of library classification includes *Coal SORT* – its conceptual browser designed to serve as a search or Indexing tool. *EP-X* – Environmental Pollution Expert (*EP-X*) has certain things in common with *Coal SORT*. The knowledge base of *EP-X* consists of hierarchical frame-based semantic network of concepts and a set of template that express the patterns called the pragmatic relationship among concepts. *BIOSIS*: It's a knowledgebase, including a significant amount of procedural knowledge to assign documents to categories automatically. Indexing Languages are structured and practical

representation of information that can be used to very good advantage of AI

AI in Indexing:

Library uses utilize the indexing service for their needed information. Indexing a periodical article involves identification of concepts, to translate these concepts into verbal descriptions, selecting and assigning controlled vocabulary terms that are conceptually equivalent to the verbal descriptions. The information provided by the information provided by the indexer, the systems can arrive at appropriate preferred terms automatically to assign relevant subdivisions. The system can make inferences and based on the inference, it can take appropriate action. *Med Index* is the good example of indexing system used in the library indexing activity.

AI in Acquisition:

Library is a growing organism – Every Library supposed to be increases their Library collection both physical and Electronic resources for their users. There are several systems have been incorporated for the acquisition of the library resources. The *Monograph Selection Advisor*, a pioneering effort in applying this emerging technology, It's another area of building Library resources. Specifically, the task modelled is the time-by-item decision that

a subject bibliographer makes in selecting monographic. Thus, the knowledge base has to be broad enough and the interfacing aspect must be easy enough for the library to get the desired information from the machine.

Trace out the particular Book:

In general, Libraries will have a number of books and other resources. If users want any particular book, AI Machines will help the readers to trace out the location of the book. Even Library staff also can utilize this application while doing Physical verification of the Library resources. AI is also useful to the physically challenged persons for easily finding their needed Book from the library collection.

Natural Language Processing:

It can apply to many disciplines, even for Library services. The different components of natural language processing are speech synthesis, speech recognition, machine translation, linguistic approaches, information retrieval and information extraction. To search database such as the Online Public Access Catalogue (OPAC), *indexing* is the basis of document retrieval. The purpose of the index is to improve the precision of retrieving parts of the relevant documents

and also to reduce the proportion of recalls and related files retrieved.

Miscellaneous:

Giving suggestions to readers:

If Library users need any information; AI mechanism will provide that information instantly. In present days there are many AI tools are available. Like ChatGPT, Copy.AI, Google Bard, etc.

Automated storage and retrieval system (ASRS):

Users can easily access the online databases and electronic resources. They can save their needed information for the future reference or they can easily retrieve the information from the Digital Library resources.

Selective Disseminative Information system (SDI):

AI system will send the current information or updates after immediately it received or get update in the databases. It will alerts or sent the information to the users.

Virtual services:

AI system will provide virtual Library service to the Library users. This will be very useful to the physically challenged users, those who are unable to visit the library to utilize the Library services for them this will be a great

opportunity. Users will get benefit with this service.

Giving updates to the Library staff:

AI system will analyze the library usage details and gives the daily updates to the Library staff. It will generate the report about how many books were issued and returned, late submission details, which books is using most of time, which book is referring by most of users, etc.

AI based Humanoid Robots:

It will guide the users and give the Library Information. It will provide OPAC service to the users. It will give the Books bibliographic information, Authors details, Edition, number of titles, Book availability information, Book reservation information, book summary, new arrivals details, etc. It also suggests the right book to the right user at right time.

Challenges:

- **Users Education:** When ever any new technology is implemented, users supposed to be aware of that technology. So that users will get benefit with that technology. Otherwise it will be worthless. So Library supposes to conduct the Library orientation programmes frequently.

- **Technical Issues:** Artificial Intelligence is totally Technical based concept. So all the modules in this system supposes to be run properly like: hard ware, Software, electricity, etc. If there are any technical issues, it supposed to be solved instantly. Otherwise Library system cannot be work.
- **Cost:** Budget is the most important factor to provide good number of resources and services to the users. Implementing the AI, Cost is the major barrier to implication of AI in the Libraries. AI systems need high end configuration with high quality equipments and software which makes price too high to bare common Libraries. Annual maintain charges will become additional expense.
- **Infrastructure:** A well established, fully digitised Library is needed for the AI services in the Libraries. It needs physical equipments; software, well certified & trained human resources and other infrastructures are required. If there is any lack of element, in the above discussed, it will show effect on the AI services.
- **Qualified or trained Library staff:** Library staff supposed to be well qualified and trained. They

supposed to be updated the knowledge and skills. Human resources are important element to monitor all the Library activates.

Conclusion:

Knowledge Resource Centres are the main pillars of the Educational institutions. Users are utilizing the Library service frequently to gain or upgrade their knowledge. In this digital era, users are showing interest to utilize the Online Digital Services. Artificial Intelligence is entering in all the fields. If we introduce the AI applications in the Libraries, every individual user will get benefited with these services. Even users need not to come to Library more over they will get a huge number of online resources. Users will get access the resources 24/7*365 days. Librarians role also become easy. AI can act as a stepping stone towards adopting these innovative technologies and enhancing the services offered by the Libraries. AI creates a great opportunity to provide right information to right user at right time with less effort.

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