Artificial Intelligence, Robotics And Its Applications In Green Libraries

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Abstract
Technologies and engineering scholars are still debating the prevalence and consequences of ICT (Information and Communications Technology) on every aspect of human life. This line of thinking is shared by experts in the field of library as well as information science/technology, who see opportunities to improve the effectiveness of librarianship via the use of AI and robots. Because of the expanding complexity of the digital environment, the rise in library use, and the urgent need for effective service delivery, this is of the highest significance in the twenty-first century. There is a pressing need to prioritise the incorporation of AI and robots in Green libraries in order to address the problems and difficulties associated with big data, overload of information, and the explosion of information. In light of the facts above, the purpose of this research is to investigate the academic discourse around the integration of AI and robotics-based technologies in knowledge institutions.

Keywords: Robotics, Information and Communication Technology, Green libraries, Librarians, Librarianship, Machine Learning, Artificial Intelligence.

Introduction

Technology is frequently regarded as a useful tool that can be utilised to do a multitude of tasks with less effort and time required. "Any inventive and better method of doing things" is one definition of "technology." The core ideas of library science, libraries need to embrace cutting-edge technology solutions in order to meet the changing demands of their users. A justification for how librarianship finally gave way to libraries through using information technology, then move towards green libraries. The concepts like data science as well as digitalization have to have emerged as a result of this. AI, robotics, machine learning, and other industries are only a handful of the others that have developed recently. It is important to acknowledge that technology is an expansive and multifaceted concept that spans several domains. These terms are often used interchangeably. But seen objectively, these terms are distinct, autonomous, and varied.

With the advancement of science and technology, our life styles are influencing and changing with a greater pace. Today, the demand for anything is increasing rapidly, and we people are harnessing the power of it to fulfill our unending demands. In this scenario we people are forgetting something important, which should be recognized before we people talk about sustainable development in this faster changing world. It is nothing but the word 'Green', which is of a great significance for a healthy survives. We have observed that, over the past few years there are increasing interests towards green revolution in almost every sector and library is one of them. Today, Green libraries work as gateways for knowledge are particularly responsible not only for disseminating the idea of sustainability but also for leading by example and thus serving as exemplars. Green libraries of today should incorporate green elements into their operations. In fact, there are several reasons why Green libraries should incorporate green features into their buildings. It is vital for the health of library users and the mother earth on which we people live (Namdeo & Khare, 2021).

Green Library

The green library is a modern library where reduce the electricity consumption and highest use of renewable resources like natural air, natural light, water, indoor plants, wooden items etc. It is the need of hours that library, greening the library environment. The librarians should take initiatives to make green library (Meher & Parabhoi, 2017).

A library that emphasizes social, economic, and environmental sustainability is considered green and sustainable. Any kind of library can be green and sustainable, but it should have a defined sustainability plan that encompasses green office practices, green office equipment, green buildings, green economy, and green library services. It should commitment to social sustainability, environmental management, and general environmental goals (IFLA Environment, Sustainability and Libraries Section, 2022).

In oxford English dictionary (Simpson & Weiner, 1989) the term “green” is defined as “pertaining to, or supporting environmentalism.” The term “sustainable” relates to forms of “human economic activity and culture that do not lead to environmental degradation, esp. avoiding the long-term depletion of natural resources”. The Online Dictionary of Library and Information Science (ODLIS) define green library “green/sustainable libraries as a library designed to

minimize negative impact on the natural environment and maximize indoor environmental quality by means of careful site selection, use of natural construction materials and biodegradable products, conservation of resources like water, energy, paper, and responsible waste disposal recycling, etc."(Namdeo et al., 2022).

Features of Green Library

Basically, green library is characterized as environment friendly library or sustainable library. According to the (Keeton, 2010) Green library necessarily possess certain essential features:

- Proper location or most suitable site
- Use of natural, recycled and regionally available materials
- Use of reflective roof or green roof and reading garden
- Use of insulating windows
- Conservation of resources like water, energy, and paper
- Use of energy-efficient lighting minimizing consumption
- System for optimized cooling
- Suitable plantation both inside and outside of building
- Circulation of fresh and healthy air
- Use of environment friendly technology

Conceptual Framework

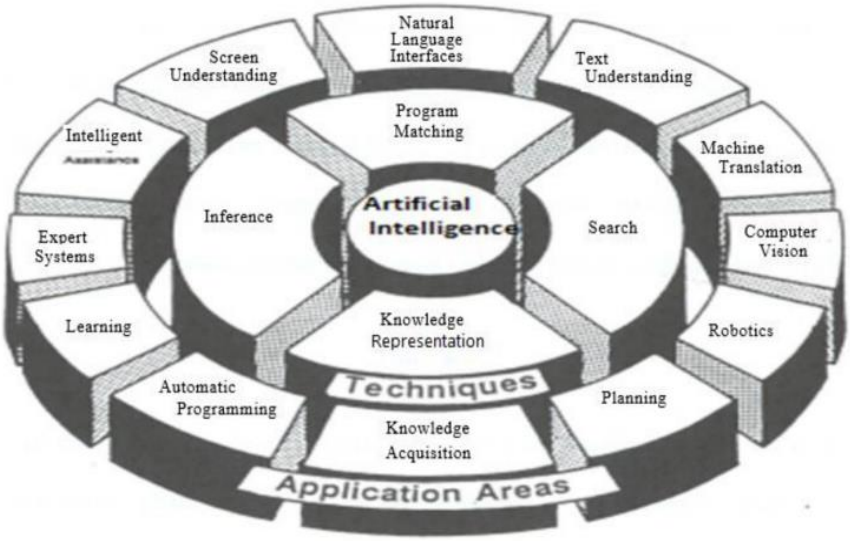

Figure 1: Conceptual Framework

Artificial Intelligence is a branch of computer science that aims to imitate the intelligence of humans in robots. It deals with the artificial intelligence (AI) simulation in computers that are designed to emulate human thought processes and behaviour. Robotics is a hard concept to describe. Its interdisciplinary approach and character are mostly to blame. This surely may have led to uncertainty being one of the main concerns of robotics research from the start. He said that robots had become a prominent area of study and suggested there was a good chance its future will be much more expansive than anybody could have predicted. the phrase as the astute linking of observation and action. In other cases, a large body of academics from the fields most experts in the fields of technology, engineering, functionality, and application. Therefore, any machine that is programmed via an automated procedure to carry out activities and operations is referred to be a robot. An autonomous intelligence was what set a robot apart from other types of machines. The areas where robotics and AI might be used in library operations are described below, including:

Cataloguing and Classification

This could be accomplished in one of two ways: either by using expert systems utilising human-machine interfaces (HMIs) to act as a barrier between a mediator and the support system, or a complete cataloguing interface in combination therewith library patrons will have exposure to a digital archive that may serve as a repository of data.

Collection Development

This means creating a model of a system that may be used to the construction of library collections. a methodology that might be used while building library holdings. In essence, the data warehouse has to be well-structured and exhaustive sufficient for Green libraries to mine for relevant information. The monograph selects advisor (MSA) is a prime example.

Indexing and Abstracting

Because robots are programmed to mimic human thought processes, it is essential that all descriptions of them utilise language that sounds natural papers be easy sufficient for the machines to understand and quickly retrieve the appropriate files and data.

Literature Review

Literature on Artificial Intelligence, Robotics, and their Applications in Green libraries encompasses a wide range of research, discussing how these technologies are transforming library operations, enhancing user experiences, and optimizing resource management to meet the evolving needs of patrons in the digital age. Researchers explore topics such as AI-driven cataloging, automated retrieval systems, chatbots for user assistance, and data analytics for collection development, offering insights into the future of Green libraries and information services.

The discussion of the decision to use high-tech tools like robots and AI in the running of Green libraries has persisted as a major topic of discussion among academics interested in librarianship. (Echedom & Okuonghae, 2021) highlights the opportunities and difficulties in implementing AI in academic's library management, while (Asemi & Asemi, 2018) discuss using intelligent systems in information and library sciences, as well as the possibilities of AI and robotics in Iranian library systems. (Tait & Pierson, 2022) evaluates the prospects and difficulties for teaching AI and robots in LIS, concluding that, in order to fulfil the demands of the future for skills, these subjects must be included into LIS professional education. The studies together imply that robots and artificial intelligence might play a part in the digital revolution of the information professions and improve library operations.

Commenting on this, (Momoh, 2018) believe that there are now many schools of thought in library administration because of advancements in computer technology. This is due to the widespread perception that AI and robotics are being increasingly put to use would jeopardize the jobs of librarians and other types of information specialists.mentioning Stephen Hawking's assertion, voiced concerns about this matter. He said that it is inevitable that humans would have to depart the planet in order to find a new home since intelligent robots were taking over employment.

In study (Borko et al., 2010) examined the development of AI applications in information systems and Green libraries throughout the preceding seven years. In-depth discussions of AI tools, system elements, knowledge representation as well as data bases, growing and user modelling, as well as cognitive science are covered by the author; these topics are shown using examples of systems of experts used for cataloguing, internet search intermediates, and reference. (Ansar.A & Sudha, 2020) explored information retrieval with the help of AI, with an awareness of their respective merits. Pattern identification, information storage, problem-solving techniques, education, and expertise are all put up as contributors to success systems interact to increase the effectiveness in data retrieval procedures. Catalogue of the most widely used database front-end development systems for artificial intelligence and contrasts them with natural language processing frameworks for retrieving information. the former may be utilised for answering questions platforms in general.

This study conducted by (G. Liu, 2011) also supported the claim, noting that using AI to improve library services was a good idea. to ensure that patrons get the greatest possible service. In order to better serve its patrons, the library now has an advantage thanks to robots and artificial intelligence. (X. Liu et al., 2014)a different work provide creative and affordable ways to create metadata (structural keywords) for knowledge-based structures using a combination of machine learning-based on natural language processing with human intelligence. Through low-barrier involvement enabled by social media systems, researchers may enhance and amend metadata and profit from more precise and efficient information retrieval—as both writers and consumers. Their experimental online system makes use of machine learning methods, which learn from the structural information supplied by academics to automatically create progressively sophisticated metadata.

(Fernandez, 2016)studies the effects of AI on library systems. The differences between artificial intelligence and intelligent agents and talks about the applications of both in the present and the future. The article looks at the advantages and technology's drawbacks and lawGreen libraries' unique worries, namely the potential effect of ABA standards on technology use. It also provides examples of how college law librarians might utilise them. (Arlitsch & Newell, 2017) note that the growth of AI has been hastened by higher network speeds, the accessibility of massive data, other machine learning methods. This development has the potential to significantly transform numerous sectors, including Green libraries. Its political and social ramifications, and the potential and risks facing public and academic libraries.

According to (Griffey, 2019) Green libraries are using AI into their systems and amenities in response to concerns about data safety and privacy. (Agadakos et al., 2019) explains how to use the AI-powered assistants Cortanan from Microsoft, Alexa from Amazon, Siri from Apple, and Google Assistant from Google to make information searches easier in everyday life. These tools were created more for regular people than librarians, however they may be used to improve database searching and speed up the process by which researchers locate the information they need. (Wheatley & Hervieux, 2019) examined academic publications, university library initiatives and strategic goals to get a sense of how AI is being used in academicGreen libraries. The objective was to identify whether and when AI was being discussed, as well as in what context. Even though just a few of institutions were discovered to be engaging in or constructing their own AI centres, the findings demonstrated a lack of reaction or expertise to the present AI trend. The Internet of Things and artificial intelligence work together in a number of contexts. to facilitate the development of big data applications, including neural networks, machine learning, deep learning, as well as other cutting-edge fields of study.

The article by (Rimland, 2019) focuses on using artificial intelligence to support micro credential assessments. The programme launched through Pennsylvania State University Green libraries, a surge in micro credential submissions, and the way that micro credentials demonstrate granular skill knowledge are all mentioned. (Finley, 2019) describes the creation of an AI-focused teaching as well as technology lending programme by the Frisco community library in Texas. Members may utilise the kits the Greenlibrary has made to investigate AI practically and practically at home. The differences between machine learning, narrow AI, and broad AI are covered in the study. (Ying et al., 2020) provide an overview of the state-of-the-art in AI-powered IoT and analyse China's smart public services using papers from 2009 to 2018. Their analysis suggests important areas for future research in the discipline and its practical applications, such as librarianship. As stated by (Schreur, 2020) Green libraries and their users, the switch from card catalogues to MARC formats has been very beneficial. Similarly, AI and connected data have comparable potential. Green libraries may represent their holdings on the Semantic Web by cataloguing their resources, which is the translation of metadata surrogates into linked open data. However, Green libraries must go beyond conventional cataloguing to new technologies like AI to enable consistent access to an expanding universe of full-text resources in order to supply some kind of regulated access to unstructured material.(Lund et al., 2020) note that as artificial intelligence (AI) advances, more and more applications of the technology are being researched, developed, and implemented in public settings, such as Green libraries, to enhance the conveyance of knowledge. Despite being a relatively new technology, artificial intelligence (AI) offers a chance to study how the public's views of innovation are developing and how this relates to the uptake of new innovations, as suggested using Roger's theory of how new ideas spread. They conducted a survey among active librarians to identify which adopter group each participant belonged to and how this identification affected their views on AI technology in Green libraries and beyond.

Table 1: Summary of Application of Artificial Intelligence and Robotics in Library Operations

Author/Year	Title	Summary	Advantages
Echedom (2021)	Opportunities and Challenges of AI in Green libraries	Highlights opportunities and challenges of AI in Green library operations.	Digital transformation and improved Greenlibrary operations potential.
Asemi (2018)	AI and Robots in Green Library Systems in Iran	Discusses the potential of AI and robots inGreen library systems in Iran.	Potential for automation and efficiency inGreen library operations.
Asemi (2020)	Use of Intelligent Systems in Green Library and Information Sci.	Explores the use of intelligent systems in Greenlibrary and information science.	Enhanced information management and user services.
Tait (2022)	Challenges and Opportunities for LIS Education in AI and Robotics	Assesses the need for integrating AI and robotics in LIS education.	Preparing professionals for future skills demands.
Momoh (2018)	Impact of Information Technologies on Green Library Management	Discusses the impact of information technologies on Greenlibrary management.	Divergent views on AI's effect on job security in Green libraries.
Galeon (2017)	AI and Job Security Concerns	Explores fears regarding AI's impact on job security.	Examines concerns related to employment and AI technology.
Smith (2005)	Progress in AI Applications in Green libraries	Reviews progress in AI applications in Green libraries.	Detailed coverage of AI tools and applications in Green libraries.
Borko (2010)	AI for Document Representations and Information Retrieval	Describes AI applications in automating document representations.	Automation of document-related tasks in information retrieval.
Sudha (2020)	AI in Information Retrieval	Examines AI's role in improving information retrieval efficiency.	Enhancing efficiency in information retrieval processes.
Teodorescu (1987)	AI and Information Retrieval Paradigms	Compares AI and information retrieval paradigms.	Applicability of AI to question-answering systems and data retrieval.
Liu (2011)	AI for Improved Library Service	Advocates the use of AI for better library services.	Enhanced library services and user experience.
Liu et al (2014)	Knowledge-Based Structural Metadata Generation	Proposes methods for generating knowledge-based metadata.	Improved metadata and information retrieval accuracy.
Fernandez, (2016)	Impact of AI on libraries	Examines how AI would affectGreen libraries.	Potential benefits and changes AI may bring to Green libraries.
Kristine (2016)	Importance of The Use of Robots and AI in Library Tasks	Emphasizes the importance of AI and robotics in library operations.	Adaptation to the changing information environment.
Arlitsch & Newell (2017)	Effects of Automation and AI on Green libraries	Examines the impact of automation and AI on Green libraries.	Potential changes and challenges in Greenlibrary services.
Griffey (2019)	AI for Data Security and Privacy	Discusses the use of AI for enhancing data security and privacy.	Improved data protection in library systems.
Agadakos (2019)	AI-Powered Assistants for Information Retrieval	Describes AI-powered assistants for improved information retrieval.	Enhanced search functions and quicker access to information.
Rimland	AI for Evaluations in Micro	Discusses the use of AI in evaluating	Improved evaluation and

(2019)	Credentials	micro credentials.	recognition of micro credentials.
Finley (2019)	AI Teaching and Technology Lending Program	Describes a teaching program around AI in a public library.	Hands-on learning and exploration of AI in a Green library setting.
Ying et al (2020)	AI-Powered IoT and Smart Public Services in China	Explores AI-powered IoT and its applications in public services.	Enhanced public services and applications of AI in China.
Schreur (2020)	AI and Linked Data in Green libraries	Discusses the potential of AI and linked data in Green libraries.	Improved access to unstructured data and resources.
Lund et al (2020)	Public Perceptions of AI in Green libraries	Examines public perceptions of AI technology in Green libraries.	Investigates librarian attitudes toward AI adoption.

AI AND ROBOTICS

AI and robotics are playing a transformative role in enhancing library services by streamlining operations and enriching the user experience. These technologies are automating routine tasks such as sorting and shelving books, enabling Green libraries to allocate their human resources more efficiently. Moreover, AI-powered chatbots and virtual assistants are providing patrons with instant, 24/7 support, answering inquiries, and guiding users through library resources. Additionally, machine learning algorithms are helping Green libraries optimize their collections by analyzing usage patterns and suggesting relevant materials to patrons, ultimately fostering a more personalized and efficient library experience. As AI and robotics continue to advance, Green libraries are increasingly leveraging these tools to improve accessibility, convenience, and the overall effectiveness of their services.

ARTIFICIAL INTELLIGENCE

Thanks to the work of dedicated researchers and developers, AI has come a long way since its birth. researchers. "Artificial intelligence" was coined as a "digital" term to replace the more traditional "cybernetics." The term "cybernetics," invented and established by Norbert Wisner, has emerged as a new science that unites numerous similarities between machines and humans. The study of human-machine communication is known as cybernetics. Generally speaking, the area of computer science known as artificial intelligence is focused on creating computer systems that possess intelligence and comprehending the nature of intelligence. It incorporates the double goal of increasing fundamental scientific knowledge and developing more advanced computers for human use. Stated differently, artificial intelligence (AI) is the computer model-based study of mental abilities. The primary goals of artificial intelligence include comprehension and execution of intellectual functions including problem-solving, acquiring new abilities, and reasoning. The field of artificial intelligence, or AI for short, combines computer science, philosophy, and psychology. Computer-generated symbolic inferences are the main topic of this article, together with the symbolic representation of information employed in these conclusions. Expert systems, a particularly well-known sort of artificial intelligence software, are essentially computer programmes that mimic speech from humans and envision a mechanised future whereby people are obsoleted. AI systems are made up of numerous rules and facts, and such programmes process information and ideas in several ways rather than using members.

Areas of Artificial Intelligence

The main emphasis of artificial intelligence is on symbolic, non-algorithmic approaches to problem resolution. Intelligence is based on the capacity to work with symbols. Even though artificial intelligence is a relatively new field, it has drastically changed civilization. The aim of its subfields, which include robotics, natural language processing, expert systems, and pattern recognition, is to use computers to mimic human intelligence. The following discusses some of the most current computational methods and domains used in the rapidly evolving science of artificial intelligence;

a) Expert System

Expert systems are knowledge-based computer programmes that act as intelligence interfaces or gateways, giving users access to databases and pertinent data. Their size varies from basic rule-based systems containing flat data to very big, integrated innovations that need years and several personnel to construct. A computer programme that offers professional judgement, recommendations, or guidance in a particular scenario is known as an expert system. The user interface, inference engine, and knowledge base are the various parts of expert systems.

b) Natural Language Processing

The ability for computers to comprehend human language is a perennial goal in the field of computer science. The following wave of computer languages will be based on natural language. Researchers in the field of artificial intelligence are typically successful in developing natural language interfaces that lack lexical and syntactic capabilities. A computer that uses natural language processing can comprehend the key linguistic ideas in a query or answer. Its objective is to create and develop computers that can comprehend, analyse, and produce language in a natural way for humans. voice synthesis, voice recognition, artificially translated linguistic methods, information retrieval, and information extraction are the many elements of language processing.

c) Pattern Recognition

It involves finding a strong match between a novel input and patterns of previously remembered stimuli. This happens again and over again throughout the lives of all organisms. Pattern recognition is a topic of research in several academic fields; some examples include computational science, the field of psychology, as well as cognitive science. The identification of patterns is predicated on statistical data that is derived from the patterns or on previous knowledge.

Usually, groupings of data or measurements structures which have to be classified are those that describe points in an appropriate multifaceted space. Data collection, pre-processing, feature extraction, choosing models as well as training, and assessment are the elements that make up pattern recognition.

ROBOTICS

Robotics is frequently defined as the branch of artificial intelligence that focuses on manipulating physical objects. Using artificial intelligence, a robot may be a mechanical device that completes performed by a computer following instructions from a human operator, a computer software, or an array of guidelines.

Types of Robotics

Since each robot is distinctive in size, form, color, and components, defining the robot and its groups is difficult. The table below attempts to categorize different types of robots predicated on their application areas;

Table 2. Types of Robotics

S. No.	Types	Descriptions
1	Aero Space	Space-capable robots, which may include several types of flying robotics. Example: NASA's The Robonaut.
2	Consumer	These robots are useful for assisting with mundane jobs. Examples: Aibo the Robot Dog, Roomba, etc.
3	Disaster Response	These serve several functions in times of need. Case in point: Japan's earthquake response with packbots.
4	Drones	These drones are pilotless aircraft equipped with in-built sensors and global positioning systems. It comes in a wide range of sizes, shapes, and weights, making it useful in a wide range of contexts. Such DRDO branches like Netra and Ruston
5	Education	These have a dual use in the home and in the classroom. Such is the EMYS robot educator.
6	Entertainment	Examples include Disney's theme park robots likes Navi Shaman as well as musically minded bots like a companion robot.
7	Humanoid	These robots look and act like real people. Consider the Pepper robot (Jones, 2018) in the Roanoke County Public Library.
8	Industrial	These robots are commonplace in industries and are employed for routine duties. Like Amazon's Robot Surgeons.
9	Medical	These are the medical robots that help doctors do their jobs. The Da Vinci Surgical System is one such example.

CHALLENGES OF APPLYING ARTIFICIAL INTELLIGENCE AND ROBOTICS IN GREEN LIBRARIES

The desire to implement AI and robots in Green libraries may encounter a number of obstacles. This problem is especially severe in third country nations. This is because the library and various other important parts of the economy are being held back by the sluggish pace of growth. Among these difficulties are:

- **The difficulty of securing funds for infrastructure acquisition and upkeep** Many Green libraries may not be able to afford the necessary robotics and AI infrastructure due to insufficient financing.
- **Unemployment, Redundancy and Loss of Jobs**Although widespread unemployment has been predicted as a result of the widespread use of artificial intelligence and automation in library services, certain hitherto obscure occupations are gradually rising into the spotlight.
- **Inadequate Technological Literacy (Ability to Use and Master New Technologies)** Green libraries and librarians may struggle, if not be unable, to rapidly adapt to this trend since the subject of artificial intelligence as well as robots is expanding and is beyond the realm of librarianship. This is because there is a dearth of talent required to ensure AI and robots functions efficiently and effectively.

OBJECTIVES OF THE STUDY

- To explore the uses of AI and ML techniques in Green libraries
- The use of robotics in Green libraries.
- To implementation of an AI Library Management System.

RESEARCH METHODOLOGY

This research uses qualitative analysis of content to explore the current literature pertaining to how AI adoption encourages creative service delivery in different types of businesses. In addition, text analysis was employed in the research to develop prospective remedies that might promote AI service innovation along with distribution in academic Green libraries. The research makes use of content analysis and descriptive approaches. The team conducted an in-depth analysis of the available literature on robotics and ES/AI. The following categories have been established for the use of ES/AI and robotics in this review:

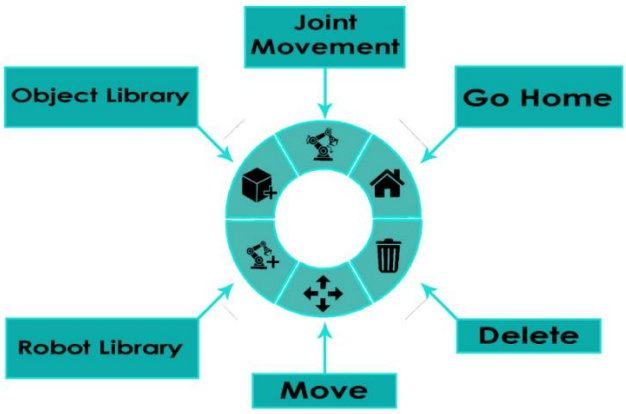

Figure 2: Robotics system in the library (Zafra Navarro et al., 2023)

- ✓ **Technology**: This category contains articles that analysed and ranked various library information management systems. Usability and deployment are the topics covered in these articles. They don't suggest any kind of model or knowledge system.
- ✓ **Resource**: Informational resources are the focus of these articles. Methods of selecting, acquiring, and using data resources fall under this umbrella.
- ✓ **User / End-user:**Expert/user opinion and end-user behaviour form the basis of most current information and knowledge models and systems. Therefore, the efficiency and precision of the systems under consideration may be enhanced by including ES technologies like the inference engine as well as the fact/rule base.
- ✓ **Service**: Articles in this category suggest an ES or associated technology and approaches that may be integrated into ESs to provide societal or technical services. Services offered to the general public so they may meet their information requirements and services offered to librarians and other library professionals.

PROPOSED WORK

An expert system operates with databases and acts as a portal for having access to them. The expert system resembles the human brain's decision-making process. It consists of two subsystems: a body of knowledge and a subsystem. The data in the knowledge base is both unstructured and structured. The interface engine, on the other hand, is a tool for iteratively applying rules to a database of knowledge manner infer new information. These can be used to maintain truth in a library system by recording dependencies in a knowledge base. The expert system's hypothetical logic can be used to investigate the implications of such an assertion. To assert, a fuzzy inference expert system is used. An expert system is used in cataloguing to provide services. Categorization is the oldest skill in the library system. The content is organized using an expert system. Expert systems can be used for acquisition and indexing as well.

Natural Language Processing is abbreviated as NLP. This artificial intelligence component is used to break the barrier that prevents computers from comprehending the languages we speak. This AI concept can be used to provide relevant information for files queried in another language. It could be used to know and generate text. In morphological analysis, the natural language processor is used to analyse words from various languages. The natural language processor will have a set of rules to apply to user-lingual input, which will then be turned to neutral language. The search is conducted using the available input, and the results are presented to the user in the language in which they were queried.

1. **Pattern Recognition:** This is commonly used to identify patterns in knowledge bases, and a match is made between the enquired content and the available content, with the id match found being displayed to the user.
2. **Robotics:** A subsystem of artificial intelligence that uses a motor to automate a task with or without supervision. A robot is a multipurpose machine that can print on-demand online library content. To retrieve the request, Comprehensive Access to Printed Material (CAPM) will be used in conjunction with a robot.

Figure 3: Robotic Book Delivery

The robot is initially given the list of books it needs, along with their corresponding ISBNs. The RFID tags on the books will allow the robot to identify them. If the RFID reads the same as the book's record, the shelf will be alerted. The book will be transferred to the robot's basket through the appropriate tray moving forward. The book will then be sent to distribution centres from which readers may get their copies. Here is how the whole thing works:

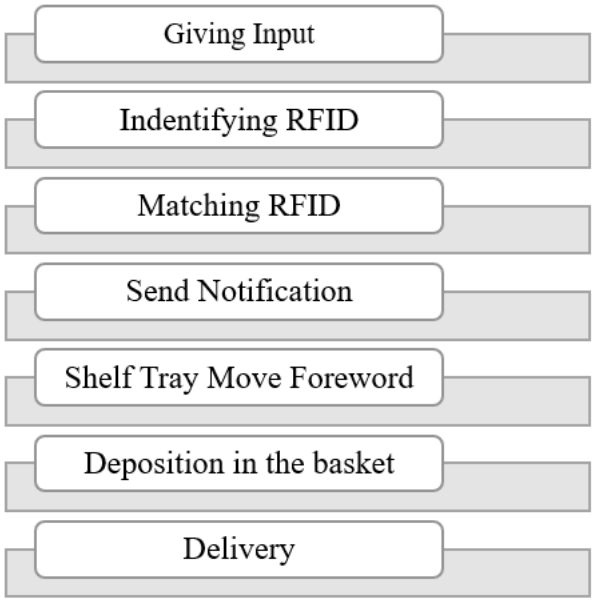

Figure 4: Book Delivery by Robots

Benefits of AI in Library

The following benefits of Using AI in Library Management Systems

- Artificial intelligence is faster than human labour.
- Using AI reduces errors and defects
- Artificial intelligence is faster than human labour.
- Using AI reduces errors and defects
- It can start exploring stuff in deep space.

RECOMMENDATIONS

- Library managers should raise funding for the purchase and upkeep of artificial intelligence (AI) and robotics (Robot) infrastructure.
- Within the discipline of librarianship, there are new disciplines developing. It's time for information managers and librarians to become more involved in these areas. Among them are data science, social media management, website administration, information literacy and training, technology evaluation, and so forth.
- Librarians need to be well-versed in technological information in order to prevent a takeover by someone from outside the profession.
- AI helps enrich the indoor environment of a library; therefore, it should apply in most of the area of the library.

CONCLUSION

Thus far, this article has demonstrated the substantial potential of integrating robots and artificial intelligence into the operations of green libraries. The evidence presented strongly supports the notion that incorporating these emerging technologies can yield significant advantages for both green libraries and librarians. It is important to emphasize that this integration should not be misconstrued as a threat to the existence of librarianship; rather, it signifies a transformative phase where technology plays a pivotal role in reshaping the field and career opportunities for librarians. The realization of these positive outcomes hinges on the conscientious implementation of necessary measures to ensure that robots and AI contribute positively to the future of green libraries and sustainable building practices.

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