



دانشگاه علوم پزشکی و خدمات بهداشتی و درمانی گیلان

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واحد کتابخانه

Applications of Artificial Intelligence(AI) in Medical Libraries

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Artificial Intelligence (AI) is increasingly being integrated into medical libraries within academic universities to enhance services, improve efficiency, and support research and education. Here are some key applications of AI in medical libraries:

1. Information Retrieval and Discovery

Enhanced Search Engines: AI-powered search engines can provide more accurate and relevant results by understanding natural language queries and context.

Semantic Search: Utilizing AI to understand the meaning behind search terms, improving the precision of search results.

Recommendation Systems: Suggesting relevant articles, books, and resources based on user behavior and preferences.

2. Data Management and Analysis

Research Data Curation: AI can assist in organizing, annotating, and managing large datasets, making it easier for researchers to find and use data.

Data Mining: Extracting valuable insights from large datasets, including clinical trial data, patient records, and biomedical literature.

Predictive Analytics: Using AI to predict trends and outcomes based on historical data, which can be useful for research and clinical decision-making.

3. Text and Data Mining

Literature Review Automation: AI tools can automate the process of conducting systematic reviews and meta-analyses by quickly identifying relevant studies and extracting key information.

Entity Recognition: Identifying and extracting specific entities (e.g., genes, proteins, diseases) from large volumes of text.

Sentiment Analysis: Analyzing the sentiment and tone of medical literature to understand trends and opinions in the field.

4. Personalized Learning and Education

Adaptive Learning Platforms: AI-driven platforms that adapt to the learning needs and styles of individual students, providing personalized recommendations and resources.

Virtual Tutors: AI-powered virtual assistants that can answer questions, provide explanations, and guide students through complex medical topics.

Competency-Based Education: Using AI to assess student competencies and recommend targeted learning resources to address gaps.

5. Clinical Decision Support

Evidence-Based Recommendations: Providing clinicians with AI-generated, evidence-based recommendations for diagnosis and treatment.

Clinical Guidelines: Keeping clinicians updated with the latest clinical guidelines and best practices by continuously analyzing new research.

Diagnostic Assistance: AI tools that assist in diagnosing conditions by analyzing patient data and medical literature.

6. Natural Language Processing (NLP)

Automated Summarization: Generating concise summaries of lengthy medical documents, making it easier for researchers and clinicians to quickly grasp key points.

Question Answering Systems: AI systems that can answer complex medical questions by analyzing large volumes of text.

Language Translation: Providing real-time translation of medical literature to support multilingual research and collaboration.

7. Knowledge Management

Ontology Development: Using AI to develop and maintain ontologies that represent medical knowledge, facilitating better information retrieval and integration.

Knowledge Graphs: Creating interconnected networks of medical knowledge that can be used to discover new relationships and insights.

Automated Indexing: Using AI to automatically index and categorize medical literature, improving discoverability.

8. User Support and Engagement

Chatbots and Virtual Assistants: AI-powered chatbots that can answer user queries, provide research assistance, and guide users to relevant resources.

Personalized Alerts: Sending personalized alerts and notifications about new research, publications, and resources based on user interests.

User Behavior Analysis: Analyzing user behavior to improve library services and tailor resources to meet user needs.

9. Research Support

Grant Writing Assistance: AI tools that can help researchers identify funding opportunities and assist with grant writing.

Publication Analysis: Analyzing publication trends and impact to help researchers identify high-impact journals and collaborators.

Plagiarism Detection: Using AI to detect plagiarism and ensure the integrity of academic work.

10. Ethical and Legal Considerations

Bias Detection: Identifying and mitigating biases in medical literature and datasets.

Ethical AI Use: Providing guidance on the ethical use of AI in medical research and practice.

Compliance Monitoring: Ensuring that AI applications comply with legal and regulatory requirements, such as data privacy laws.

11. Collaboration and Networking

Research Collaboration Platforms: AI-driven platforms that facilitate collaboration among researchers by identifying potential collaborators and connecting them based on shared interests.

Conference and Event Recommendations: Suggesting relevant conferences, workshops, and events based on user research interests.

12. Resource Management

Collection Development: Using AI to analyze usage patterns and predict future resource needs, helping libraries make informed decisions about collection development.

Inventory Management: Automating the management of physical and digital resources, ensuring efficient access and availability.

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Conclusion:

By leveraging AI, medical libraries in academic universities can significantly enhance their ability to support medical education, research, and clinical practice, ultimately contributing to better healthcare outcomes.