

AI in evidence-based Medicine

Farzad Parvizpour
Applied Cell Sciences PhD

Kurdistan University of Medical
Sciences



Principles of AI



- **Learning from Data:**

- AI is designed to learn from data. They use statistical techniques and algorithms to analyze and recognize patterns in large datasets.

The more data = the better learning and improving

- **Automation:**

- AI is designed to automate tasks that typically require human intelligence:

data analysis, decision-making, problem-solving.

increase efficiency and productivity

Principles of AI



- **Adaptability:**

It can capable of adjusting their algorithms and models in response to new data or changing conditions.

more suitable for a wide range of applications.

- **Problem-Solving:**

AI is used to solve complex problems that are often beyond the capabilities of traditional computing systems.

problem-solving ability is a fundamental principle of AI



- **Pattern Recognition:**

AI systems excel at recognizing patterns in data:

visual patterns in images, audio patterns in speech, and statistical patterns in datasets.

- **Neural Networks:**

Neural networks are a key component of many AI systems, particularly in machine learning.

Prediction and Forecasting:

AI can make predictions and forecasts based on historical data.

Principles of AI



- **Scalability:**

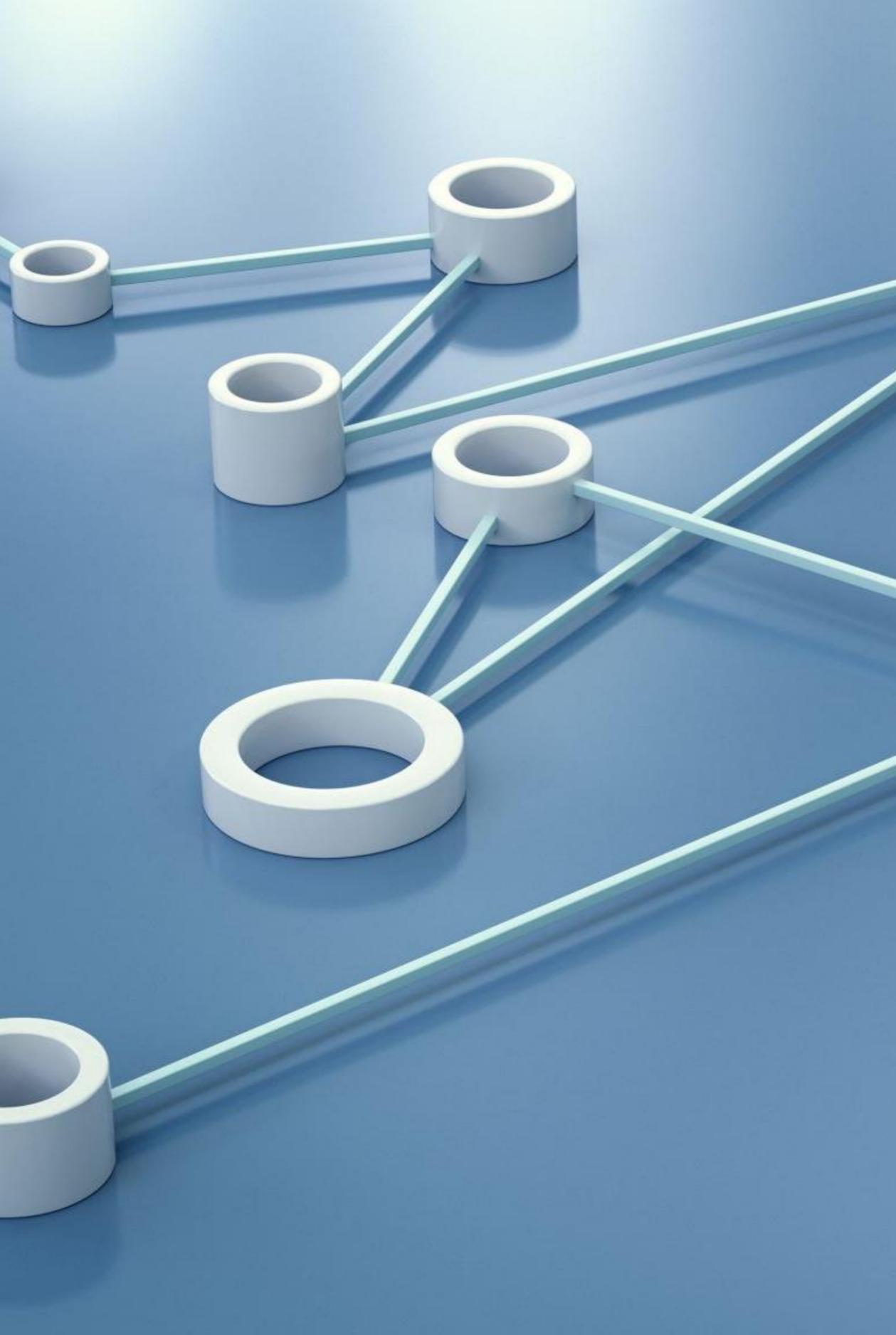
AI systems can be scaled to handle vast amounts of data and complex tasks.

suitable for applications ranging from healthcare to finance to autonomous vehicles.

- **Human-AI Collaboration:**

AI is often designed to complement human capabilities rather than replace them.

recognition the synergistic potential of combining human expertise with AI's computational power.



Benefits of AI in Evidence-Based Medicine



Improved Diagnosis and Treatment

AI can analyze large amounts of medical data to provide more accurate and personalized diagnoses and treatment plans.



Efficiency and Cost Savings

AI can automate routine tasks, freeing up healthcare professionals to focus on more complex cases. This can lead to cost savings and improved efficiency in the healthcare system.

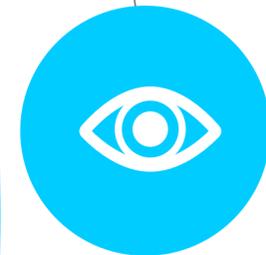


Improved Patient Outcomes

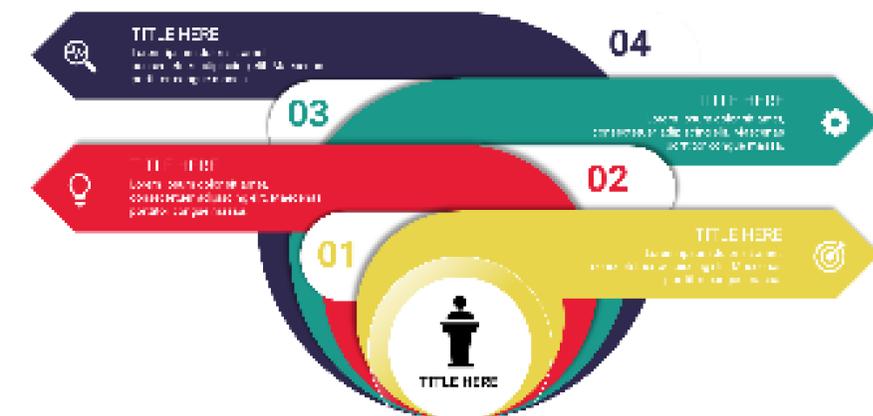
By providing more accurate diagnoses and treatment plans, AI can lead to improved patient outcomes and better overall health for individuals and populations.



Medical Knowledge and Information



AI language models have access to a vast amount of medical knowledge and information. They can provide healthcare practitioners with **up-to-date** information on medical conditions, treatment options, medication guidelines, and other relevant healthcare topics.



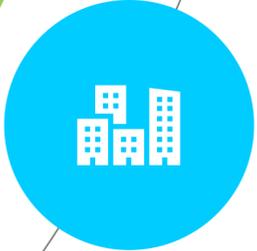
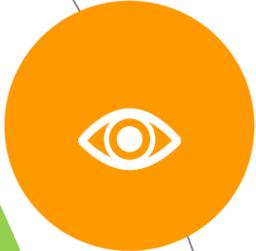


Research Support

It can help healthcare practitioners in their research endeavors by providing access to relevant scientific literature, summarizing research papers, or offering insights on specific research topics.

This can aid in evidence-based practice and keep healthcare professionals informed about the latest advancements in their field.





Telemedicine Support

It can assist healthcare practitioners in telemedicine settings by providing real-time information, offering diagnostic suggestions, or guiding them through virtual examinations. This can enhance remote healthcare delivery and support the provision of care from a distance.



AI & Scientific Writings



THE ROLE OF AI IN SCIENTIFIC WRITING

- AI, like ChatGPT, serves as a valuable writing assistant in academia.
- It combines natural language processing and machine learning to support researchers throughout the writing process.



AI in Systematic Reviews

- **Automated Literature Search:** AI tools can quickly scan vast databases to identify relevant studies.
- **Streamlined Data Extraction:** It aids in extracting and organizing data efficiently.
- **Summarization:** AI generates concise summaries of selected studies, facilitating the review process.



AI in Meta-analysis

Meta-analyses, demanding rigorous data synthesis, are enhanced by AI:

Data Synthesis: AI streamlines the combination of data from multiple studies, reducing human error.

Study Identification: It identifies pertinent studies more accurately.

Statistical Analysis: AI supports statistical analysis and visualization for robust meta-analyses.



AI offers a multitude of benefits for scientific writing:

- **Time-Saving:** AI automates tasks, such as literature search and citation management, reducing manual labor.
- **Grammar and Style:** It ensures impeccable writing, catching errors and enhancing readability.
- **Access to Literature:** AI provides instant access to extensive databases, expediting literature reviews.
- **Translation Support:** Access to global research by translating articles.
- **Citation Management:** Easy citation and reference formatting.

AI and epidemiologists

- **Data Processing and Cleaning:** Large epidemiological datasets often contain errors, missing values, or inconsistencies. AI can automate the process of data cleaning, ensuring the data's quality and reliability.
- **Data Integration:** Epidemiologists often need to integrate data from multiple sources, such as hospital records, government databases, and research studies. AI can merge and harmonize diverse datasets, allowing for comprehensive analysis.
- **Efficient Data Management:** AI tools can efficiently store and manage extensive datasets.





- **Cluster Analysis:** AI can identify clusters of diseases or health-related events geographically or temporally, helping epidemiologists understand the spatial and temporal distribution of diseases.
- **Rapid Response:** During disease outbreaks, AI can quickly analyze data to provide epidemiologists with timely information to make informed decisions. This speed can be crucial in controlling the spread of diseases.
- **Longitudinal Data Analysis:** AI can analyze data over extended periods, allowing epidemiologists to study long-term trends, chronic diseases, and the effects of interventions over time.
- **Pattern Recognition:** AI excels at recognizing patterns and trends in data, even in large and complex datasets.
- It can identify correlations, associations, and potential causes of diseases or health-related phenomena.



- **Predictive Modeling:**

AI, particularly machine learning algorithms, can develop sophisticated predictive models based on historical data, improving the accuracy of predictions.

- **Identifying Rare Events:**

Some health-related events are rare but crucial to detect, such as rare diseases or adverse drug reactions.

AI can help epidemiologists spot these rare events in vast datasets by applying anomaly detection techniques.

- **Real-time Data Monitoring:**

AI systems can continuously monitor and analyze incoming data in real-time.

This capability is valuable for tracking disease outbreaks, assessing public health trends, and responding promptly to health emergencies.



Ethical Considerations

As with any new technology, the use of AI in evidence-based medicine raises important ethical questions that must be addressed. Some of the key considerations include:

- **Data privacy and security:** With the large amounts of data required for AI analysis, it is important to ensure that patient data is protected and used ethically.
- **Bias and fairness:** The algorithms used in AI systems may perpetuate biases that exist in the data, leading to unfair treatment of certain groups of patients.
- **Transparency and accountability:** It is important for AI systems to be transparent in their decision-making processes and for the developers to be accountable for any errors or biases that may arise.



Limitations And Considerations



- **Human Oversight:** While AI can significantly enhance scientific writing, it's crucial to emphasize that it is not a replacement for human expertise.
- Researchers should exercise human oversight to ensure the accuracy, relevance, and ethical considerations of AI-generated content.
- For example, AI-based grammar checkers may suggest corrections that, while grammatically correct, may not align with the specific context or nuances of scientific writing.



Limitations and Considerations

Garbage in, garbage out

- **Data Quality:** In tasks involving data analysis and synthesis, the quality of input data significantly impacts AI's output.
- Researchers should critically evaluate the quality and relevance of the data used in AI-driven analyses.
- Garbage in, garbage out applies here; if the input data is flawed or biased, the AI's conclusions or recommendations may also be problematic.

Future of AI in Evidence-Based Medicine



Precision Medicine

AI algorithms can analyze vast amounts of data to identify patterns and make more precise diagnoses and treatments tailored to individual patients.



Drug Discovery

AI can help speed up the drug discovery process by analyzing large amounts of data to identify potential drug candidates and predict their efficacy and safety.



Clinical Decision Support

AI can assist healthcare providers in making more informed decisions by analyzing patient data and providing recommendations for diagnosis and treatment.



Conclusion

AI is a game-changer

- In conclusion, AI is a game-changer in scientific writing, offering efficiency and precision.
- Embrace AI to elevate the quality and productivity of your research.



*AI Tools are
the future of
EBM*

AI

Thank you

*Jumping in life forward progress
Is possible just by creativity and
Anovation, two wings of development*

*Future is in your hand if and
just if foster your creativity*



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