ARTIFICIAL INTELLIGENCE IN PODIATRY

TRANSFORMING FOOT HEALTH THROUGH INNOVATIVE TECHNOLOGY

Disclosures

Wenjay Sung, DPM has no relevant financial interests to disclose.

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LEARNING OBJECTIVES

- Give an overview of artificial intelligence
- Delve into the specific applications of AI in podiatry
- Explore the benefits and challenges of integrating AI into podiatric practice

WHY TALK ABOUT AI?

WEBINAR NEWS - PART 1

Podiatrists Discuss Integrating Research and AI

Ben Pearl, DPM hosted a webinar on integrating research and AI. Panelists included **Warren Joseph, DPM, David Armstrong, DPM, Patrick Deheer, DPM,** and **Jeff Robbins, DPM**. Dr. Joseph commented that a big push for research and publishing came historically from **Harvey Lemont, DPM**, who was the chairman of the department of medicine at PCPM. The process of developing research and going through an IRB was reviewed.

Dr. David Armstrong

Dr. Armstrong has been an early adopter of AI glasses. He uses them in the OR and suggestions come up on the internal screen. The panel concluded AI is a powerful tool but needs guard rails.

AGENDA FOR DISCUSSION

Overview of Artificial Intelligence

Understanding of artificial intelligence, defining its core concepts and key technologies driving innovation today.

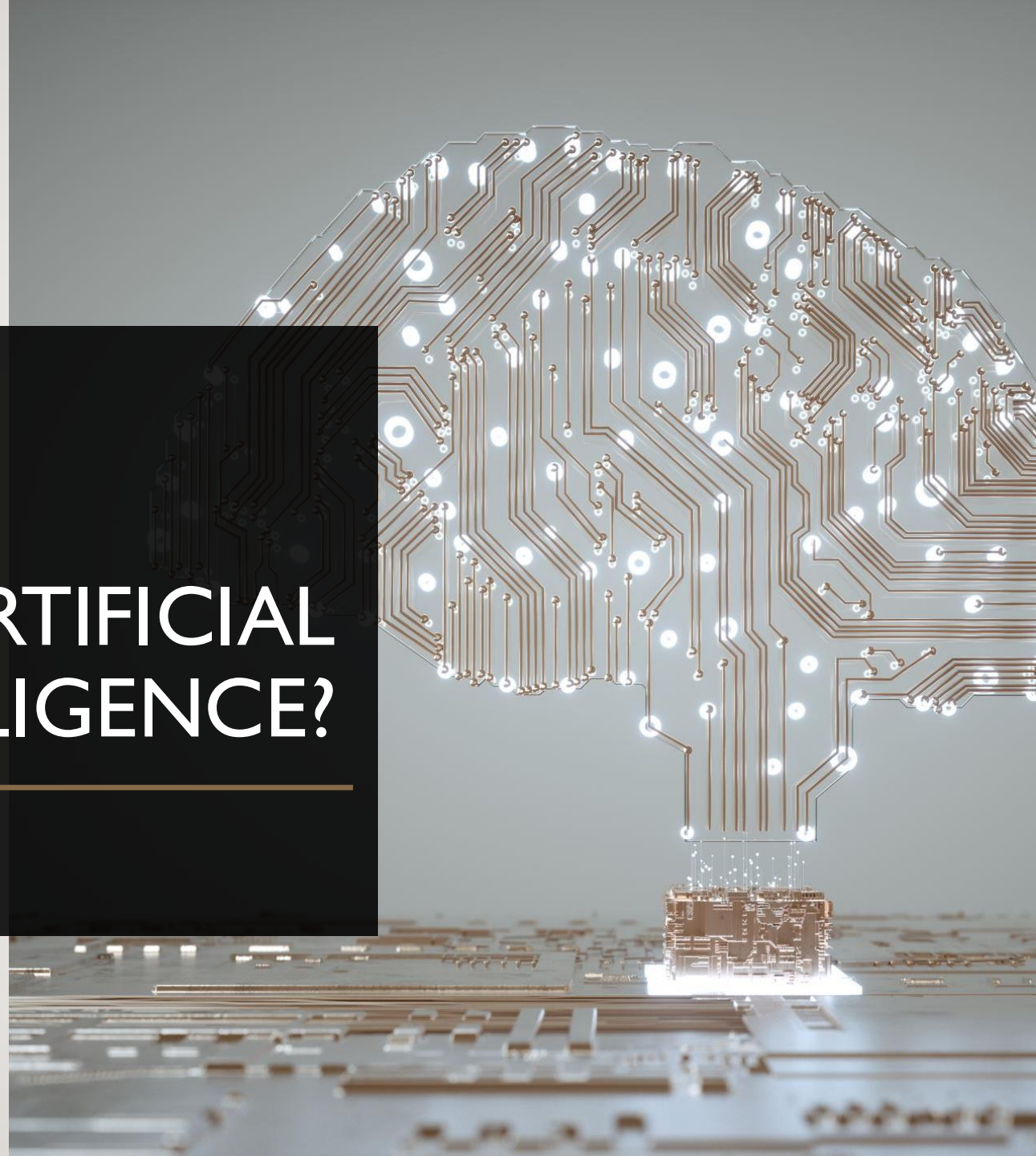
AI in Podiatry

Specific applications of AI in podiatry, focusing on diagnostic tools and predictive analytics that enhance patient care.

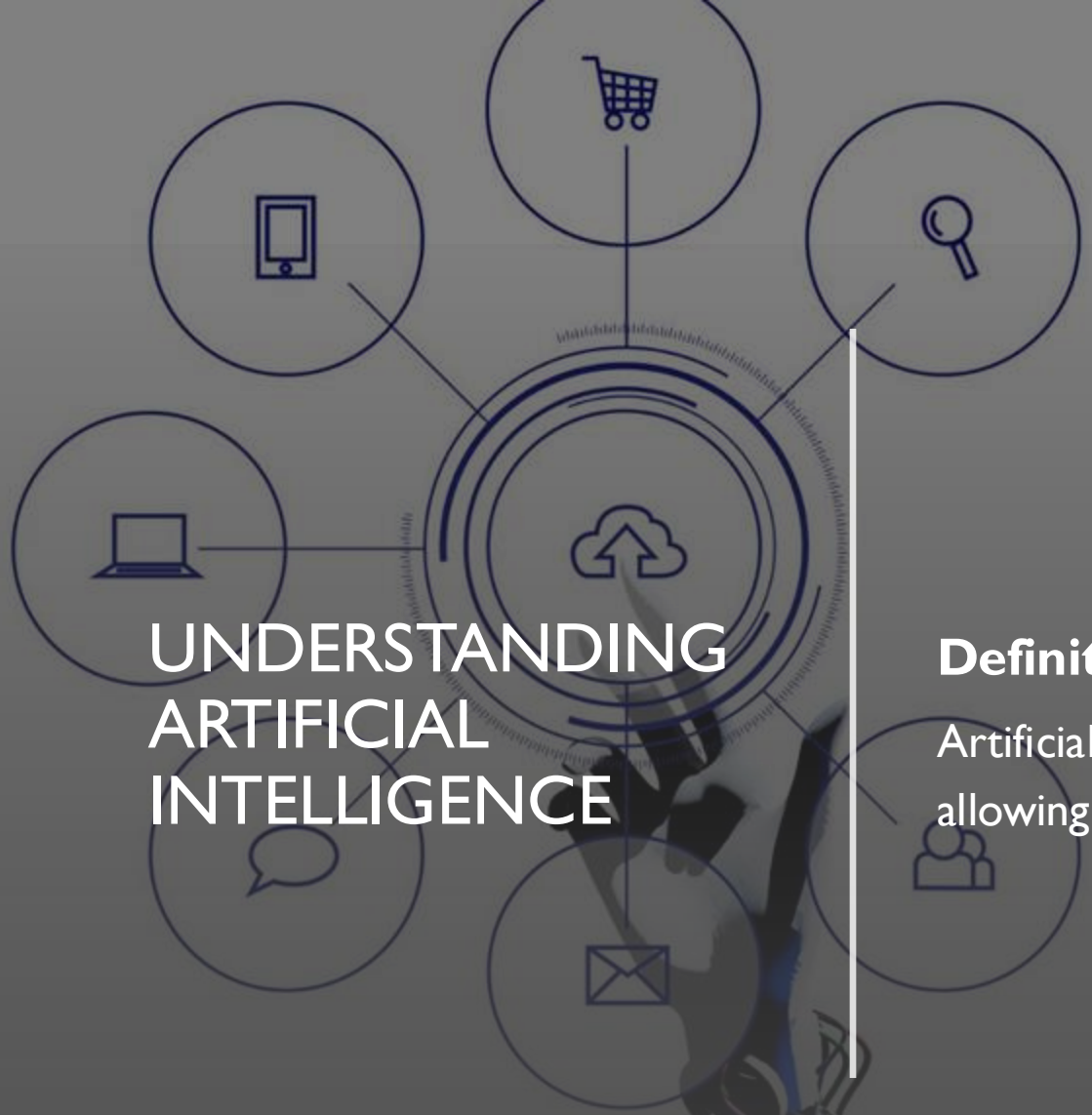
Future of AI in Podiatry

Discuss the advantages and challenges of integrating AI into podiatric practices, highlighting both opportunities and potential obstacles.

WHAT IS "AI" ARTIFICIAL INTELLIGENCE?



UNDERSTANDING ARTIFICIAL INTELLIGENCE



Definition of AI

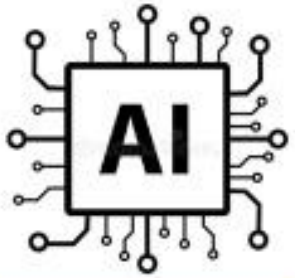
Artificial intelligence simulates human intelligence in machines, allowing them to think, learn, and adapt.

Artificial narrow intelligence (ANI)

- **Executes specific task within a focused area, without ability to self-expand functionality**
- Driving, medical diagnosis, financial advice

Artificial general intelligence (AGI)

- **Approaches human-level capacity, performing broad tasks, reasoning, and improving its capabilities**
- Earning university degrees, convincing humans that it is human



Artificial super intelligence (ASI)

- **Outperforming human intelligence in practically every field**
- Helping to achieve societal objectives or threatening the human race

KEY TECHNOLOGIES IN AI

Machine Learning

Machine learning is a subset of AI that enables machines to learn from data and improve their performance over time without explicit programming.

Natural Language Processing

Natural language processing allows machines to understand and interpret human language, facilitating communication between humans and computers.

Computer Vision

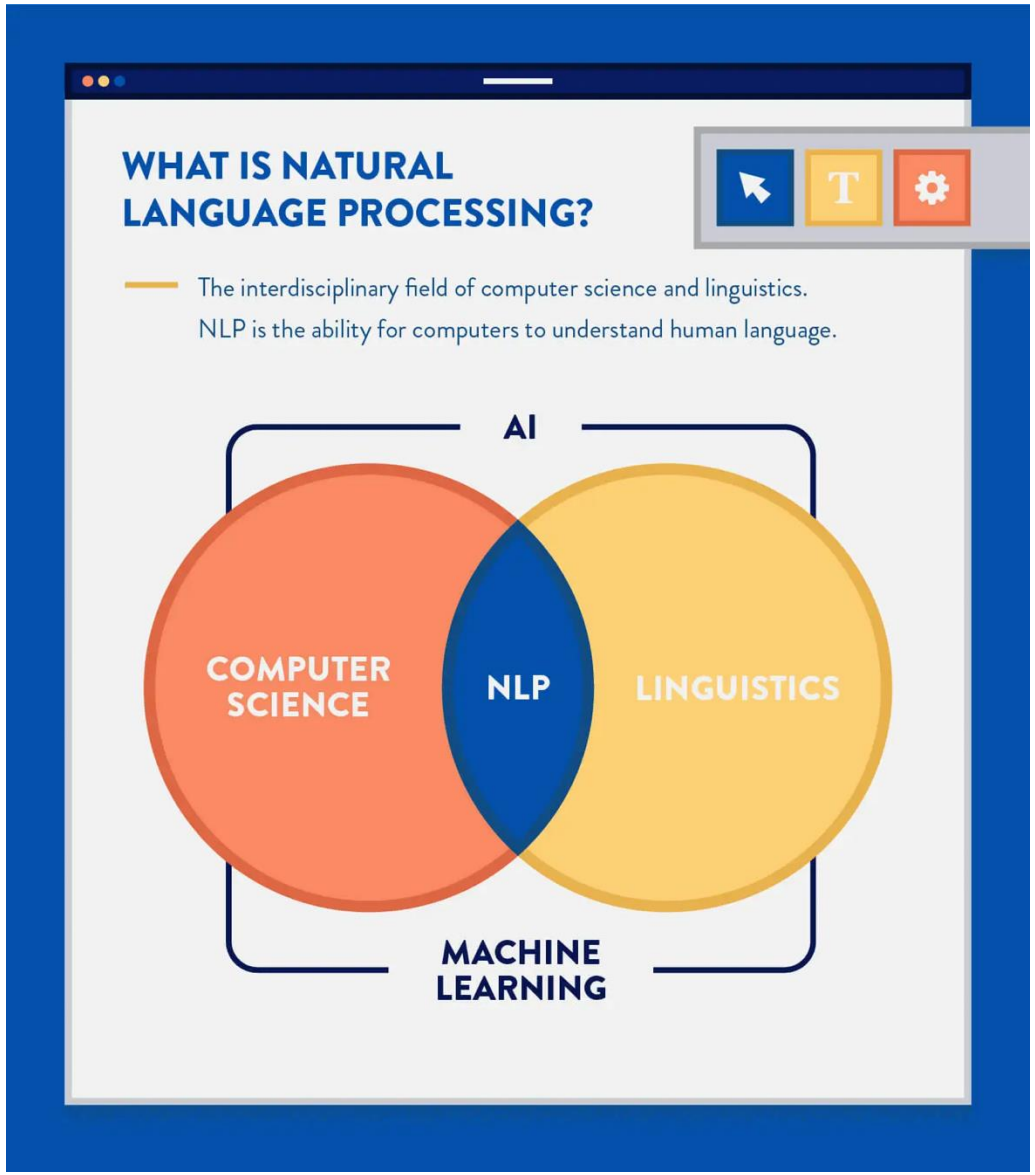
Computer vision empowers machines to interpret and understand visual information from the world, enabling applications like image recognition.

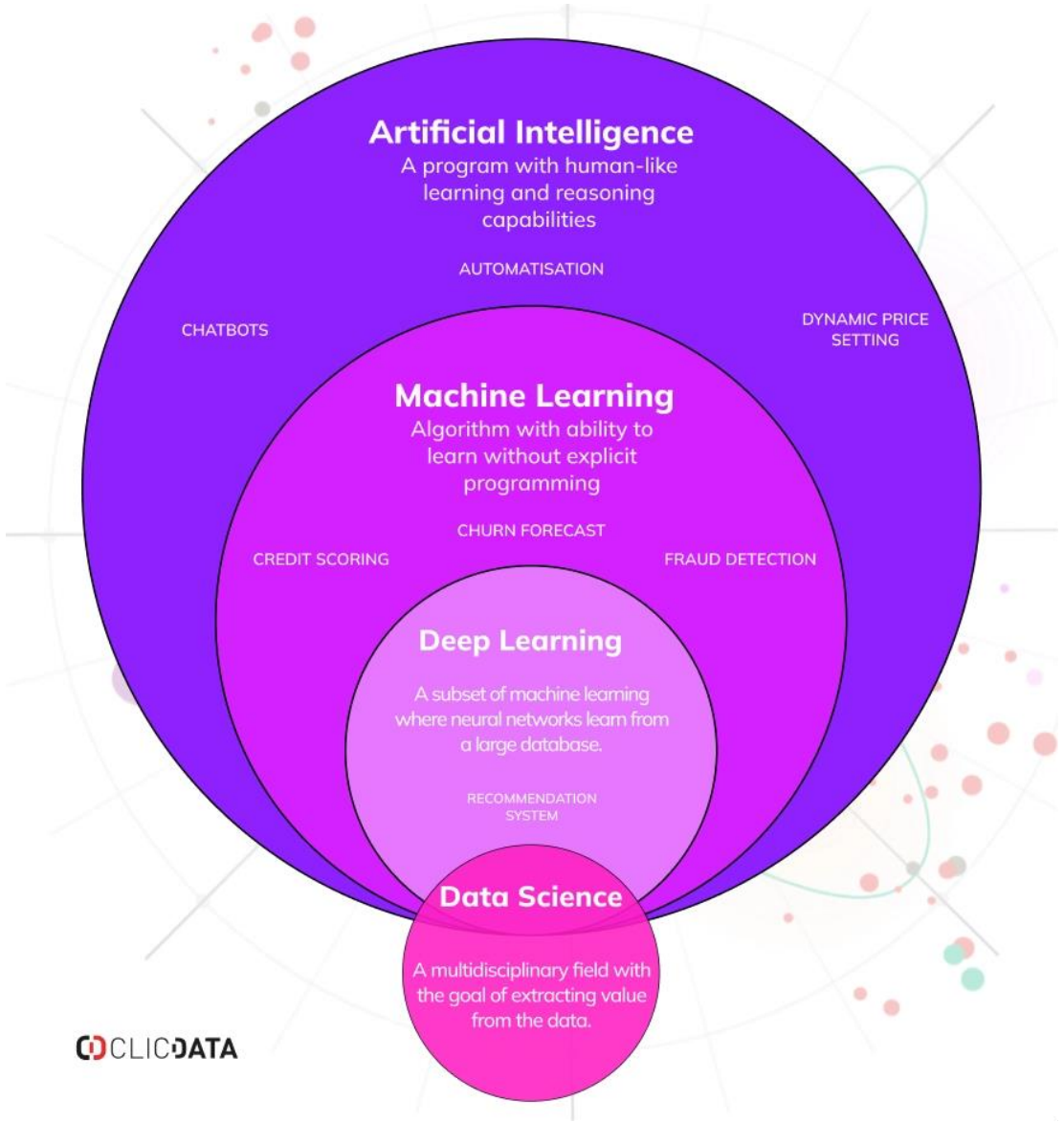
Traditional Algorithm

A programmer thinks of a solution algorithm and program that into a software/machine

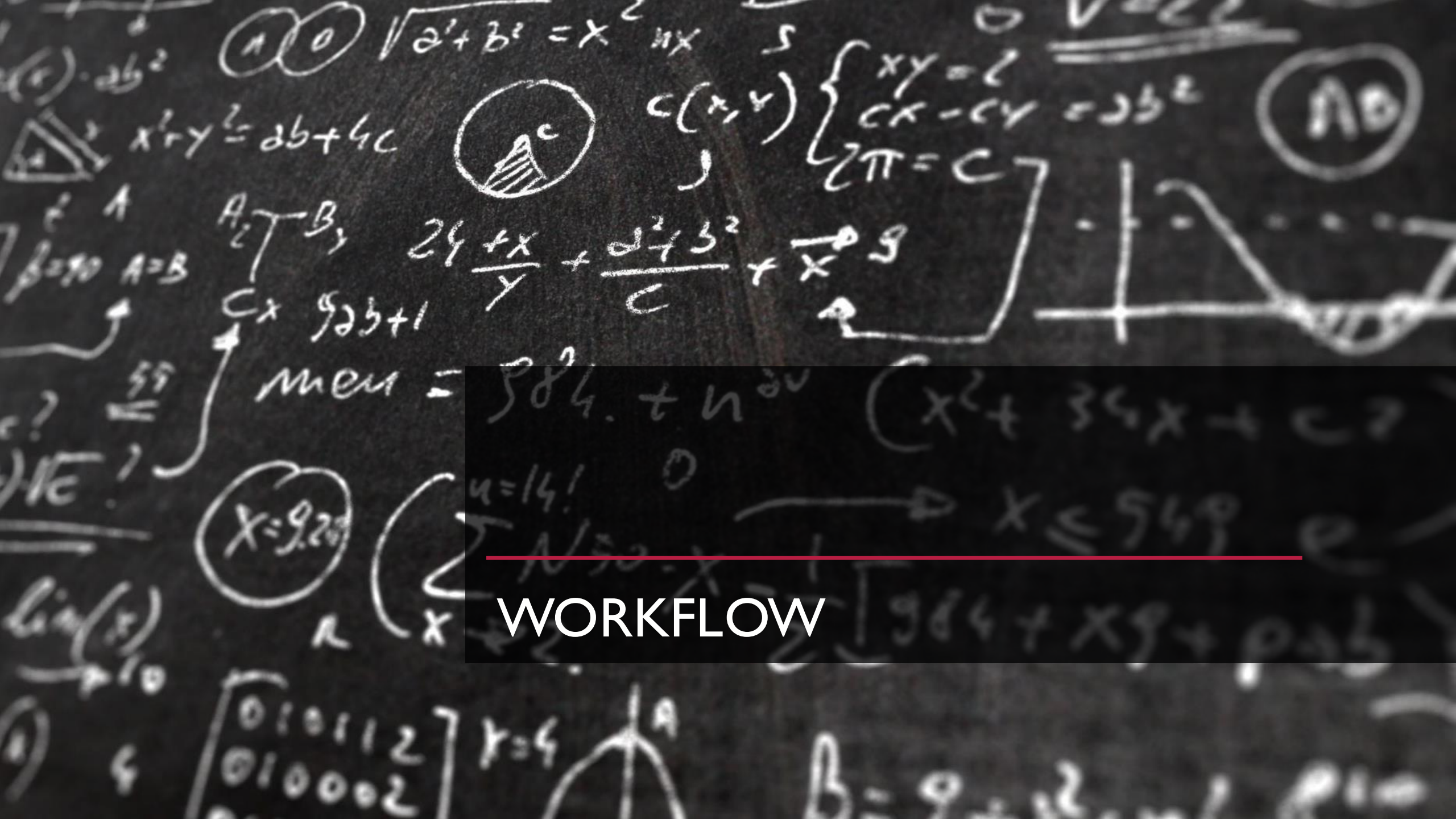
Machine Learning

A programmer builds a math model that maps inputs to outputs, and then feed the model with pairs of (input + expected output) to train the model (adjust its internal parameters).


WHAT IS NATURAL LANGUAGE PROCESSING?
T
The interdisciplinary field of computer science and linguistics.
NLP is the ability for computers to understand human language.
AI
COMPUTER SCIENCE
NLP
LINGUISTICS
MACHINE LEARNING

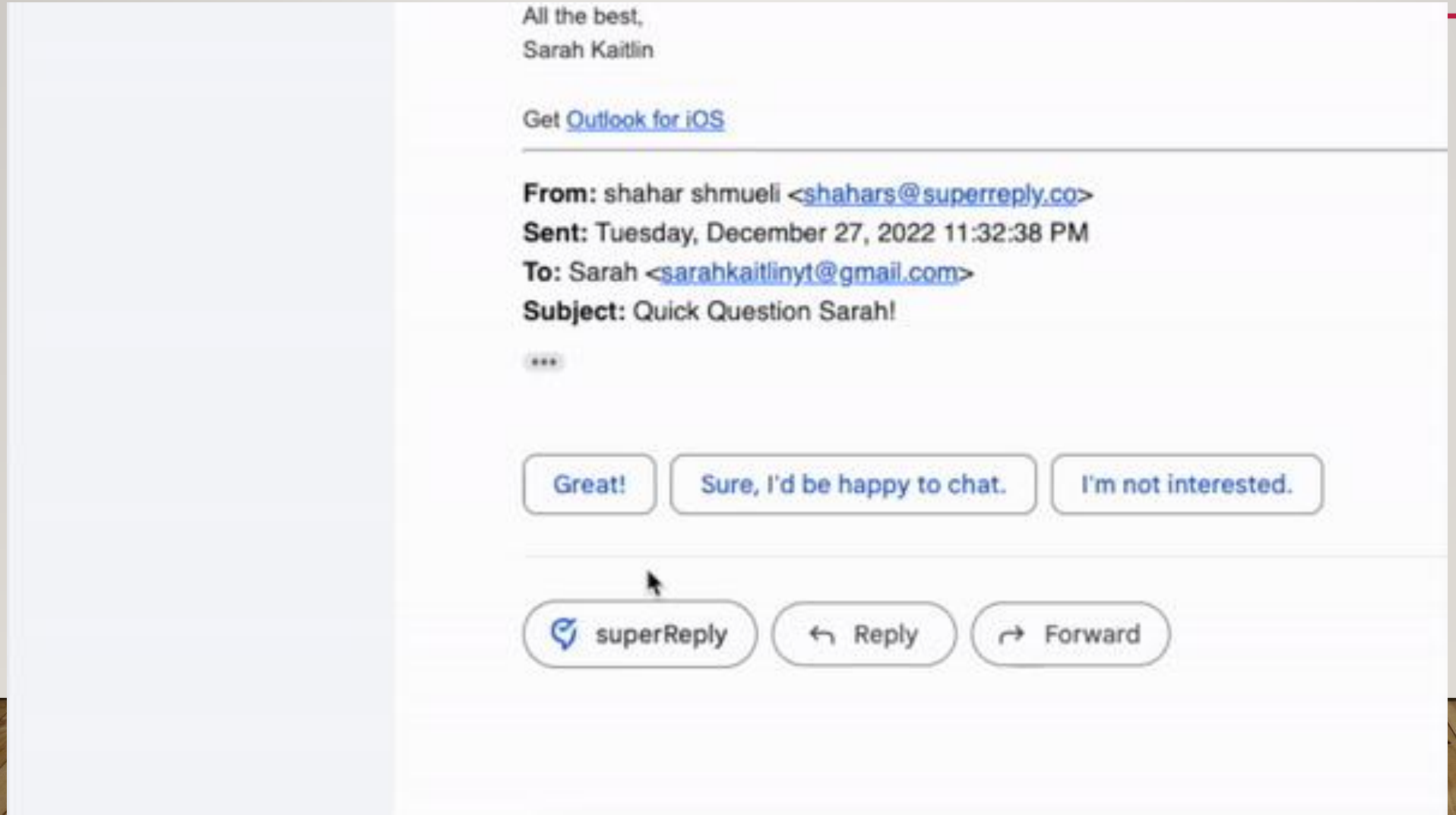

Artificial Intelligence
A program with human-like learning and reasoning capabilities
AUTOMATISATION
CHATBOTS
DYNAMIC PRICE SETTING
Machine Learning
Algorithm with ability to learn without explicit programming
CHURN FORECAST
CREDIT SCORING
FRAUD DETECTION
Deep Learning
A subset of machine learning where neural networks learn from a large database.
RECOMMENDATION SYSTEM
Data Science
A multidisciplinary field with the goal of extracting value from the data.
CLICDATA

AI'S IMPACT TO PODIATRY



WORKFLOW

EXAMPLE OF AI WORKFLOW



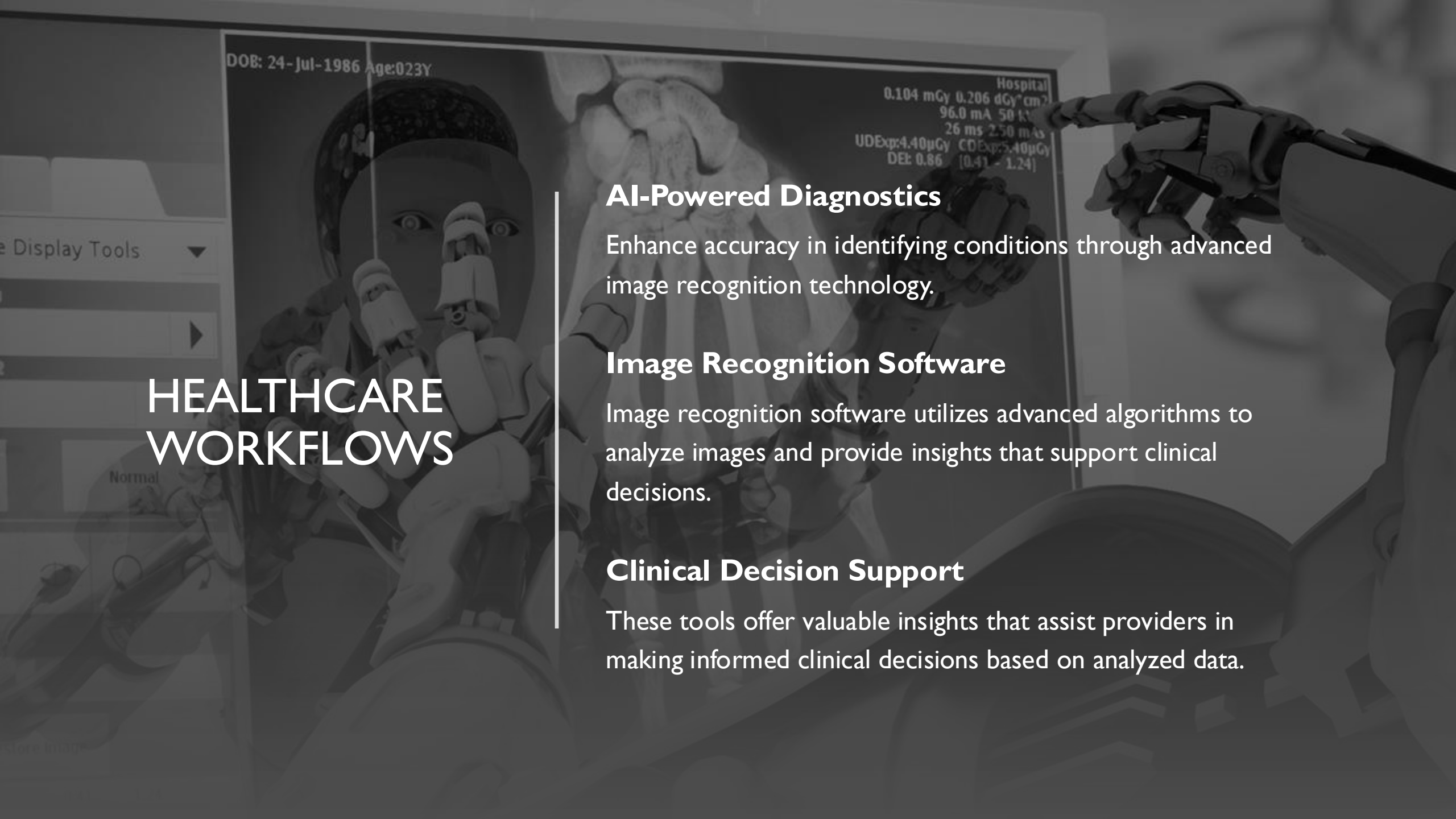
PODIATRY WORKFLOW

Data collection: Collect data to process and analyze

Data processing: Use AI models to process and analyze the data

Decision making: Use AI to make decisions based on the data

Action execution: Use AI to execute tasks based on the decisions



HEALTHCARE WORKFLOWS

AI-Powered Diagnostics

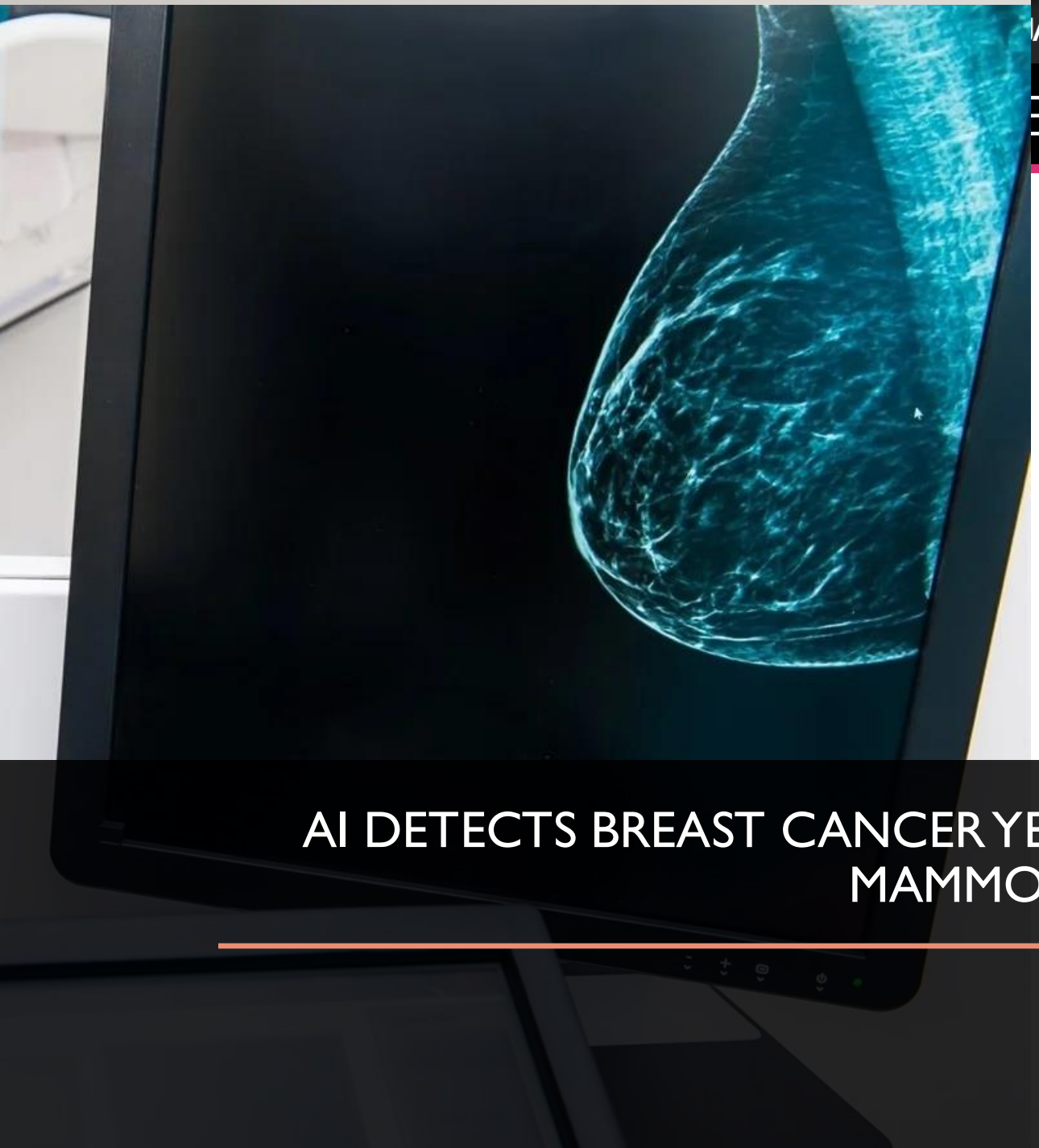
Enhance accuracy in identifying conditions through advanced image recognition technology.

Image Recognition Software

Image recognition software utilizes advanced algorithms to analyze images and provide insights that support clinical decisions.

Clinical Decision Support

These tools offer valuable insights that assist providers in making informed clinical decisions based on analyzed data.



AI DETECTS BREAST CANCER YEARS BEFORE DIAGNOSIS FROM MAMMOGRAMS

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Original Investigation | Oncology

October 3, 2024

Artificial Intelligence Algorithm for S clinical Breast Cancer Detection

Jonas Gieseke, MSc[1]; Natalija Moshina, MD, PhD[1]; Christoph I. Lee, MD, MS[2,3]; et al

» Author Affiliations | Article Information

JAMA Netw Open. 2024;7(10):e2437402. doi:10.1001/jamanetworkopen.2024.37402

Key Points

Question Can commercial artificial intelligence (AI) tools for cancer detection o

AI TRENDS

Advancements in Diagnostics

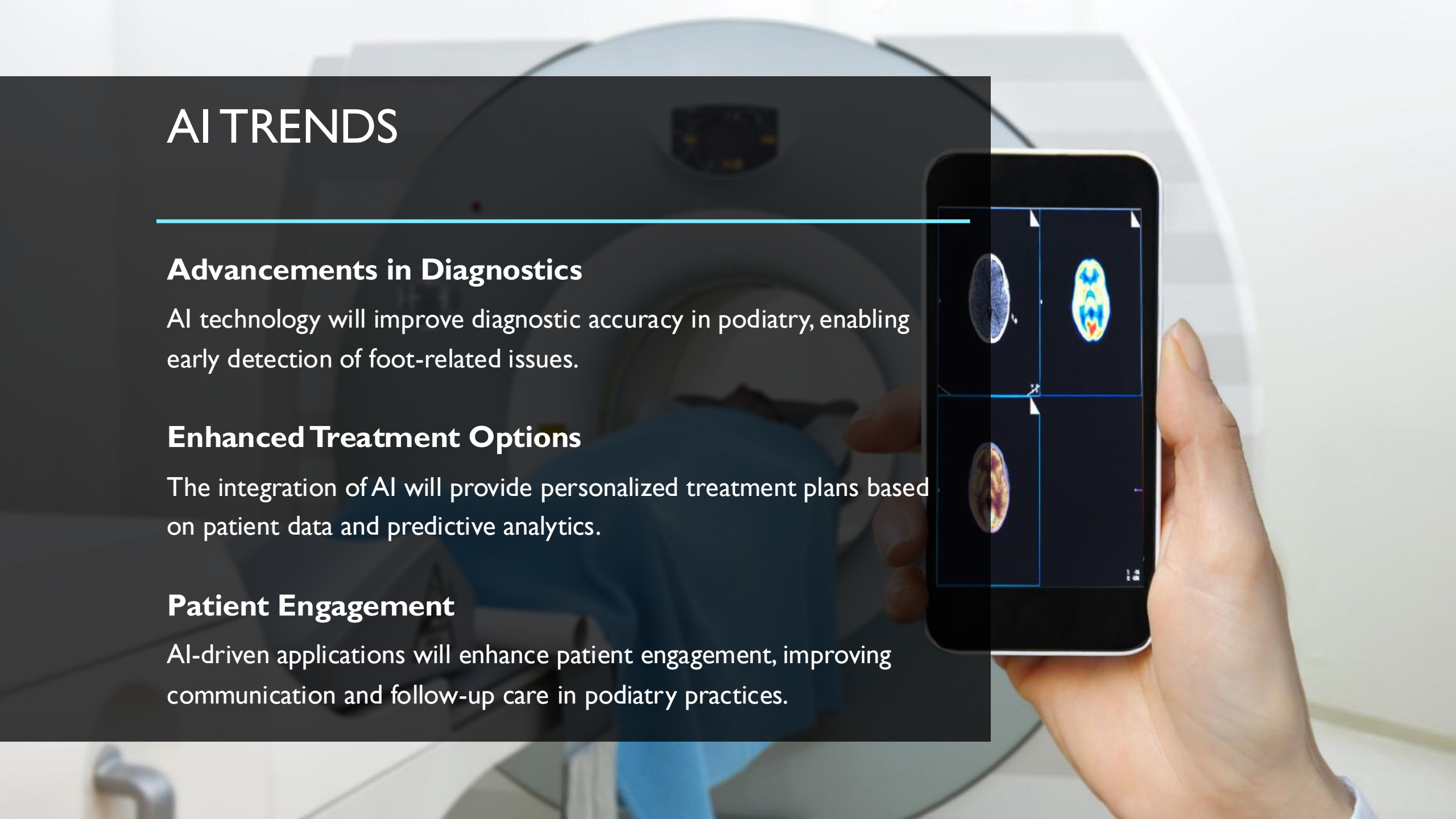
AI technology will improve diagnostic accuracy in podiatry, enabling early detection of foot-related issues.

Enhanced Treatment Options

The integration of AI will provide personalized treatment plans based on patient data and predictive analytics.

Patient Engagement

AI-driven applications will enhance patient engagement, improving communication and follow-up care in podiatry practices.



CHALLENGES OF AI INTEGRATION

Enhanced Patient Care and Efficiency

AI can significantly improve patient care in podiatry by providing precise diagnoses and personalized treatment plans. Integrating AI into podiatry practices can streamline operations, reduce wait times, and enhance overall clinic efficiency.

Ethical Concerns

The use of AI in healthcare raises ethical concerns, including data privacy and decision-making accountability.

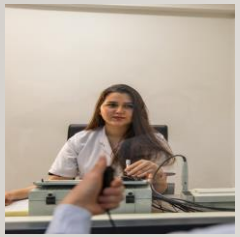
Need for Professional Training

Healthcare professionals require proper training to effectively integrate AI tools into their practice and ensure optimal use.

TRAINING AND ADAPTATION

Adapting to AI Technologies

Podiatrists will need to adapt their practices to include AI technologies, enhancing their clinical capabilities.



Ongoing Training and Education

Develop CME's for podiatrists to effectively integrate AI tools into their practices.

Maintaining Patient Care

While using AI, podiatrists must preserve the human touch in patient care to ensure quality services.

TRENDS AND INNOVATIONS

ROBOTIC AI - Wearable Technology

Wearable technology is changing podiatric care by providing valuable data on patients' activities and foot health, improving treatment plans.

LONG-TERM EFFECTS ON PODIATRY

Changes in Clinical Workflows

AI is expected to streamline clinical workflows in podiatry, allowing for more efficient patient management and treatment processes.

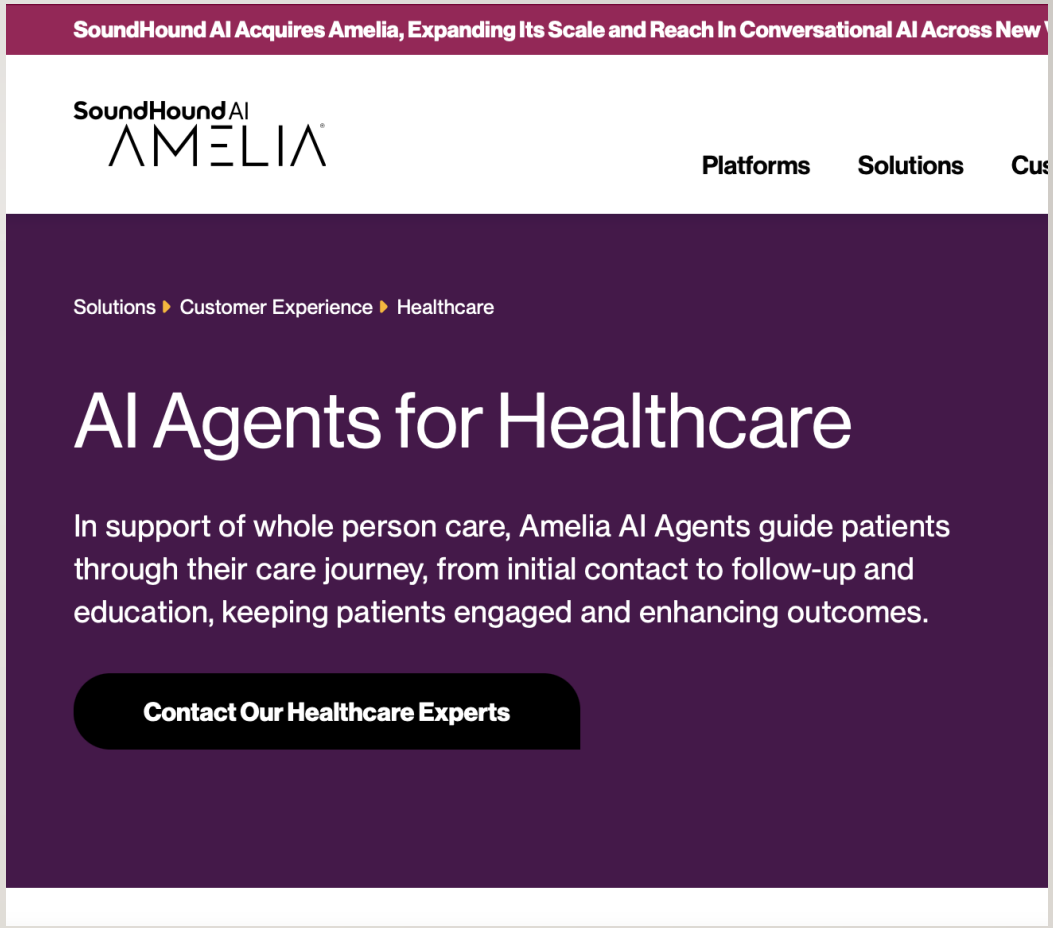
Enhanced Collaboration

With AI, collaboration among healthcare professionals may improve, leading to better treatment plans and patient outcomes.

Improved Patient Care

AI technologies have the potential to enhance overall patient care in podiatry by providing personalized treatment options and monitoring.

PEER REVIEW?


SoundHound AI Acquires Amelia, Expanding Its Scale and Reach In Conversational AI Across New
SoundHound AI
AMELIA
Platforms
Solutions
Cus
Solutions
Customer Experience
Healthcare
AI Agents for Healthcare
In support of whole person care, Amelia AI Agents guide patients through their care journey, from initial contact to follow-up and education, keeping patients engaged and enhancing outcomes.
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Using AI in Peer Review Is a Breach of Confidentiality

October 11, 2023

Reviewers are trusted and required to maintain confidentiality throughout the application review process. Thus, using AI to assist in peer review would involve a breach of confidentiality. In a recently released guide notice, NIH clarifies that NIH scientific peer reviewers are prohibited from using natural language processors, large language models, or other generative AI technologies for analyzing and formulating peer review critiques for grant applications and R&D contract proposals. Refer to the NIH's CSR post for more information.

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JOURNAL ARTICLE

Use of artificial intelligence and the future of peer review

Howard Bauchner ✉, Frederick P Rivara

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Article Contents

DATA PRIVACY CONCERNS

AI and Patient Data Privacy

The integration of AI in healthcare raises significant concerns about the privacy of patient data, necessitating stringent measures.

Regulatory Compliance

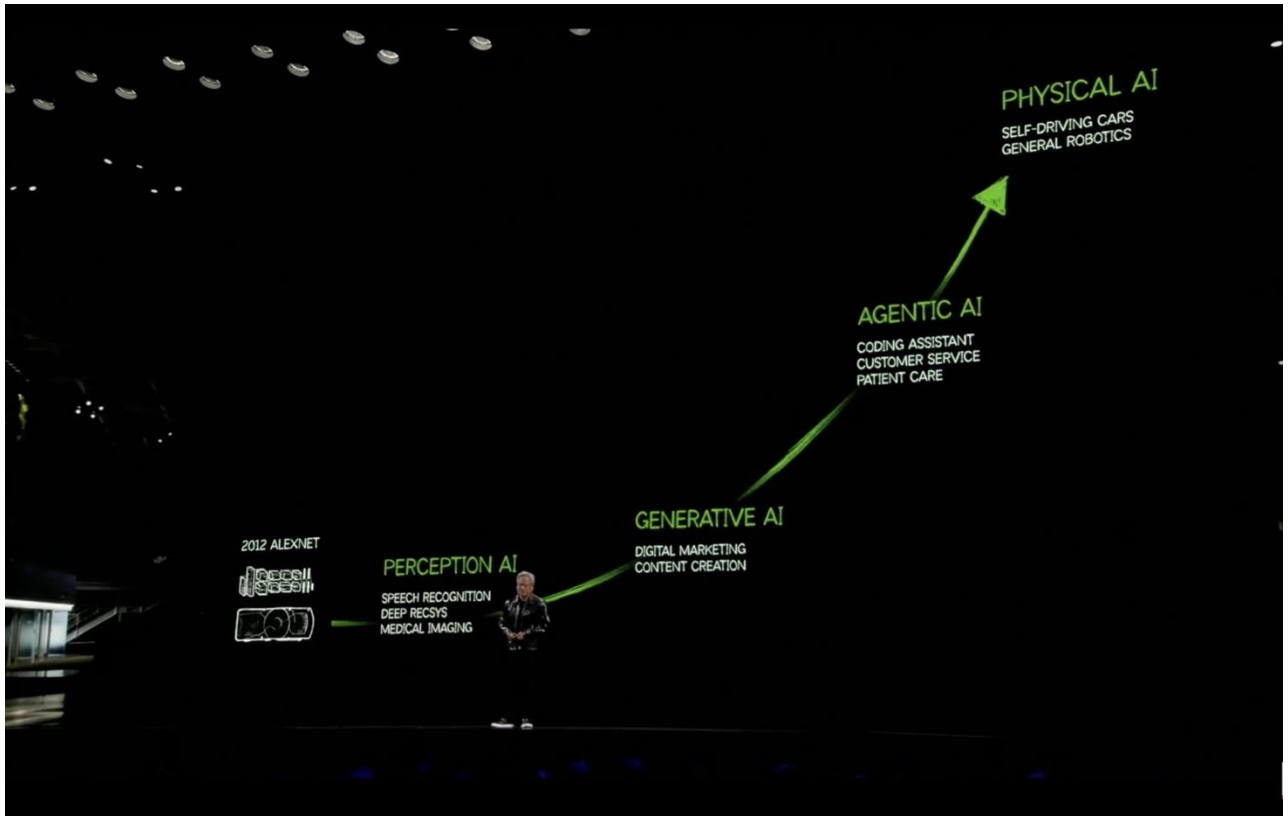
Ensuring compliance with data privacy regulations is vital to safeguard sensitive health information in AI applications.

Protecting Sensitive Information

Protecting sensitive patient information is critical as AI systems increasingly gather and analyze health data.

WHAT CAN PODIATRIST DO WITH AI TODAY?

CREATE YOUR OWN AI AGENT



What are AI Agents?

Architecture

WORKFLOW: CREATING AN AI CHATBOT FOR PODIATRISTS

Collect relevant medical history, symptoms, and any diagnostic information from the patient to feed into the chatbot's knowledge base.

Integrate the ChatGPT language model into the chatbot application, enabling it to understand natural language queries and provide tailored responses.

Train the chatbot using the collected patient data and information on podiatric conditions, treatments, and best practices to expand its knowledge base.

Design an intuitive and user-friendly interface for the chatbot, ensuring seamless interaction and easy access to information for both patients and podiatrists.

Ensure the chatbot complies with relevant data security and privacy regulations, protecting sensitive patient information and maintaining trust in the system.

Test the chatbot with a pilot group of patients and podiatrists, gather feedback, and continuously refine the system to improve its accuracy and effectiveness.

CONCLUSION

Impact of AI on Podiatry

AI technology is set to revolutionize podiatry by improving diagnosis, treatment plans, and patient outcomes significantly.

Benefits of AI Integration

Integrating AI will streamline processes, enhance accuracy in diagnoses, and provide personalized treatment for patients.

Challenges to Overcome

While AI offers numerous benefits, challenges such as data privacy, technology adoption, and training need to be addressed.