

Single Day Event

Finding the path in the wonderland of AI

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Finding the path in the wonderland of AI

*I need to speak to an audience filled
with clinical trial and data experts
about AI in clinical research*

Artificial Intelligence

- Intelligence = Ability to acquire and apply knowledge
- Simulation of the activities of the brain has always been a subject of interest to scientists, philosophers and artists
- Digital assistants, Cab aggregators, biometric recognition, targeted advertisements and online recommendation engines are common
- Automation of back-end processes, chatbots for customer services, predictive maintenance in manufacturing
- Image and Speech processing, Robotics



I asked CoPilot (1/2)

Certainly! Here's some content you can use for your presentation on AI in clinical research:

- Introduction to AI in Clinical Research:
 - Start by explaining what artificial intelligence (AI) is and its relevance in the healthcare industry.
 - Highlight how AI has already made significant strides in drug discovery and early-stage research.
- Challenges in Clinical Trials:
 - Discuss the challenges faced in clinical trials, such as patient recruitment, trial design, and data analysis.
 - Mention the need for more precise, efficient trials with better success rates.
- AI Applications in Clinical Trials:
 - Explore how AI can optimize various aspects of clinical trials:
 - Trial Design: AI can help design more targeted and meaningful trials.
 - Patient Recruitment: AI tools can assist in identifying suitable patients for specific trials.
 - Data Analysis: AI algorithms can analyze large datasets more accurately and efficiently.



...I asked CoPilot (2/2)

- Examples of AI Tools:
 - Mention specific AI tools used in clinical research, such as:
 - [DeepMind's AlphaFold: Predicts the 3D structure of molecules, aiding drug discovery.](#)
 - [Other AI-driven tools: Used for disease pattern analysis and drug molecule identification.](#)
- Benefits and Future Prospects:
 - Discuss the potential benefits of AI in clinical research:
 - Faster drug discovery.
 - Improved patient outcomes.
 - Enhanced healthcare delivery.
 - Highlight that AI will continue to play a crucial role in the future of drug development and clinical trials.
- Remember to customize the content based on your audience and the depth of information you want to provide.
Good luck with your presentation!

I asked ChatGPT-4 (1/4)

Certainly. Here's a detailed content suggestion for each slide of your presentation on "AI in Clinical Research":

- **### Slide 1: Title Slide**
 - **Title:** AI in Clinical Research
 - **Subtitle:** Transforming the Future of Healthcare
 - **Presenter's Name:** [Your Name]
 - **Date:** [Date]
 - **Company/Organization:** [Your Company/Organization]
- **### Slide 2: Introduction to AI in Clinical Research**
 - Brief overview of AI and its increasing relevance in clinical research
 - Key AI technologies: machine learning, natural language processing, and deep learning.
- **### Slide 3: Importance of AI in Clinical Research**
 - Highlight the challenges in traditional clinical research (e.g., lengthy processes, high costs, data management issues).
 - Introduce how AI can address these challenges (e.g., improving efficiency, reducing costs, enhancing data accuracy).
- **### Slide 4: Key Applications of AI in Clinical Research**
 - **Data Management:** Automated data cleaning, integration, and management.
 - **Patient Recruitment:** AI-driven identification and recruitment of eligible participants
 - **Predictive Analytics:** Predicting outcomes and adverse events using AI models.
 - **Drug Discovery:** AI in discovering new drugs and repurposing existing ones.

I asked ChatGPT-4... (2/4)

- **### Slide 5: AI in Data Management**
 - How AI algorithms improve data quality and consistency
 - Examples of AI tools used for data management (e.g., machine learning algorithms for anomaly detection).
 - Case study or example of successful AI implementation in data management.
- **### Slide 6: AI in Patient Recruitment**
 - How AI identifies and recruits participants using electronic health records (EHRs) and other data sources.
 - Benefits of AI in patient recruitment (e.g., reducing time and costs).
 - Real-world example or case study demonstrating AI in patient recruitment.
- **### Slide 7: AI in Predictive Analytics**
 - Explanation of AI models predicting patient outcomes, disease progression, and adverse events.
 - Benefits of predictive analytics for clinical decision-making.
 - Example of AI-driven predictive analytics in clinical trials (e.g., predicting patient responses to treatment).
- **### Slide 8: AI in Drug Discovery**
 - Role of AI in accelerating drug discovery and development
 - Examples of AI techniques used (e.g., deep learning for molecule analysis).
 - Success stories or case studies of AI in drug discovery (e.g., identifying new drug candidates).

...I asked ChatGPT-4 (3/4)

- **### Slide 9: Ethical and Regulatory Considerations**
 - Ethical issues related to AI in clinical research (e.g., data privacy, bias, informed consent).
 - Overview of regulatory frameworks and guidelines for AI in clinical research
 - Steps to ensure ethical and compliant use of AI.
- **### Slide 10: Challenges and Limitations**
 - Technical challenges (e.g., data quality, algorithm transparency)
 - Operational challenges (e.g., integration with existing systems, staff training).
 - Future research and development needs to address these challenges.
- **### Slide 11: Future of AI in Clinical Research**
 - Emerging trends and technologies in AI for clinical research
 - Potential long-term impact on clinical trials and healthcare
 - Vision for the next 5-10 years in AI-driven clinical research.
- **### Slide 12: Case Studies and Success Stories**
 - Detailed case studies showcasing successful applications of AI in clinical research.
 - Quantifiable outcomes and benefits achieved through AI.

...I asked ChatGPT-4 (4/4)

- **### Slide 13: Conclusion**
 - Summary of key points discussed in the presentation
 - Reiteration of the potential benefits of AI in transforming clinical research
 - Call to action or next steps for stakeholders to consider.
- **### Slide 14: Q&A**
 - Invitation for questions from the audience.
 - Provide contact information for further follow-up.
- **### Slide 15: References**
 - List of references and sources cited throughout the presentation.
 - Additional resources for attendees to explore further.
- Feel free to customize the content based on your specific focus and audience. If you need more detailed information or specific examples for any slide, please let me know.



Why do we need AI?

- Increase efficiency
- Eliminate human errors (validity and reliability of clinical research)
- Handle repetitive tasks more effectively
- Detecting fraud patterns
- Multiple parameters, multidimensional complexity (wearables)
- Cut R&D costs ~\$28 bn/year
- Reduce clinical research timeline by half (Source: ITIF)



AI beats humans

- Infinite patience, no clinician fatigue, and no language barriers
- Collective wisdom of millions of books, case studies, and data.
- Cost the patients almost nothing
- Google's Med-PALM 2 scored 85% in USMLE and is now being tested in clinical settings

Used cases in Clinical Research

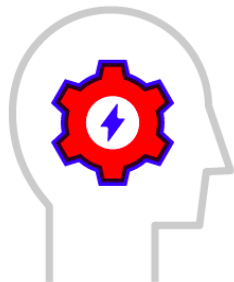
- Design: Protocol, eCRF, SAP, Edit checks,
- Translation: Protocol, eCRF, Consents, Regulatory Submissions
- Trial management - SDV? Site selection, patient enrollment, Review and risk management
- Helpline AI-bots
- Data Management – Queries, Coding
- Medical writing



Participant Enrollment?

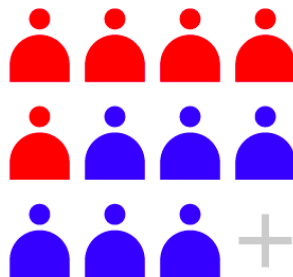
- Mining of Medical records >> Pre-selection
- Home based, wearables
- Compliance management
- Patient motivation and engagement

AI Jobs and Market Growth Statistics



79% of business leaders expect AI to transform their organizations with the next three years.

Source: Deloitte



58% of adults believe AI will lead to increased job creation in the technology field.

Source: Statista



91% of business leaders believe generative AI will improve their organization's productivity.

Source: Deloitte



Key Challenges

- Talent
- Data availability
- Privacy and confidentiality
- Cost of implementation
- Developing trust amongst users
- AI governance

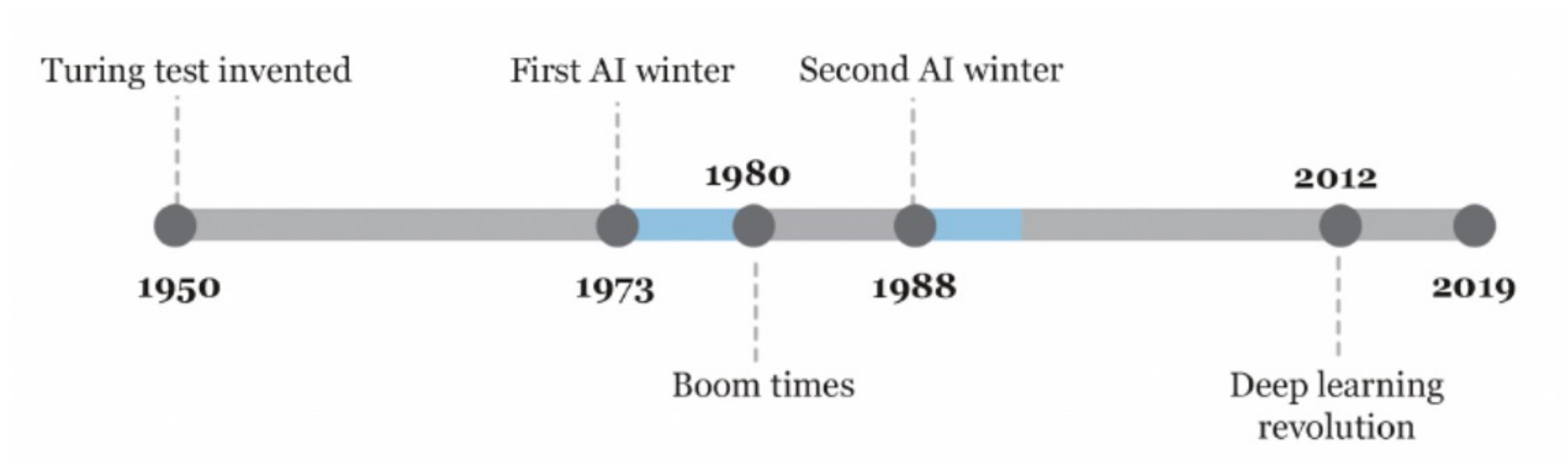


Power demand growth

From AI/data centers

- 15% CAGR in data center power demand from 2023-2030
- Data centers to make up 8% of total US power demand by 2030 from about 3% currently

AI Winters



AI is a Social Weapon of Mass Destruction

- Yuval Noah Harari

Regulatory, Ethics

- EU was the first global superpower to draft regulatory frameworks around the use of AI
- Global Partnership on Artificial Intelligence (GPAI) mandates the development and use of AI in accordance with human rights and democratic values



Human Intelligence

- Being Human = Empathy, Personalized care, Judgment
- Learning and caring

Thank you

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**The Global Healthcare
Data Science Community**

Contact Channels

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