AI IN ACTION

Building Your Essential AI Toolkit

AI for Health & Well-care

Enhancing care from bedside to daily life across the lifespan

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Agenda

1. Why Now?
2. Promise & Perils of AI
3. Use Cases
4. Summary / Q& A

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Why Now?

The context and need for AI in Health and Well-care

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Intelligence

Human traits that enable us to:

- Perceive
- Contextualize
- Interpret
- Learn
- Communicate
- Act

Artificial Intelligence

1/+ trait manifest in software to:

- **Enhance**: Do the same thing - better
- **Substitute**: Do something different
- **Augment**: Do better, together

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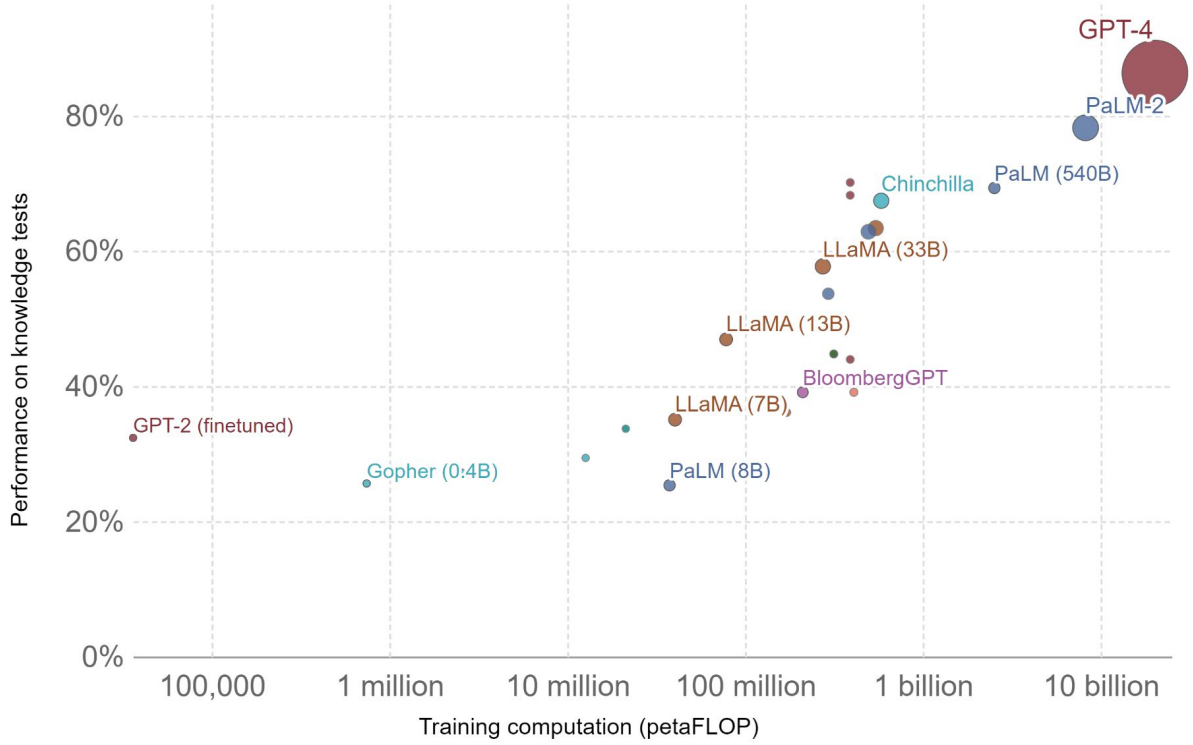
Why AI for Health & Well-care?

- Skyrocketing costs: aging demographics, innovations & new science
- Massive amounts of structured and unstructured data
- Not enough skilled labor to meet the rising demand

Why now?

- Accelerated growth of computation

- More computation → improved performance



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Epoch (2023), "Key trends and figures in Machine Learning". Retrieved from: 'https://epochai.org/trends' Oct 2023, CC-BY License
Epoch (2023), "Performance on knowledge tests vs. training computation" Retrieved from: https://ourworldindata.org/grapher/ai-performance-knowledge-tests-vs-training-computation, CC-BY License

The Promise of AI for Health and Well-care

- Enhanced and personalized patient care
- Satisfied and focused clinicians
- Reduced administrative burden & greater efficiency
- Rapid & Impactful Innovation
- Trustworthy & effective public health
- Revitalized and modernized education

Use Cases

AI for Healthcare and Wellness

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AI use cases are wide ranging: examples

	Measure	Decide	Execute
Care delivery	Diagnose condition	Recommend treatment	Deliver treatment
Public health	Identify risk	Recommend intervention	Intervene
Administration	Identify gaps	Prioritize actions	Automate
Research	Reveal causality	Identify drugs	Prepare submissions
Patient engagement	Assess status	Personalize plan	Communicate
Education	Assess baseline	Recommend content	Disseminate and teach

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Source: Adapted from Partners Healthcare WMIF Whitepapers AI in Healthcare I and AI in Healthcare II © 2018 Recon Strategy

AI for Care Delivery

Measure

Diagnose condition

Examine medical images at similar or better accuracy and much faster than humans alone

TEMPUS

Decide

Recommend treatment

Predict patient response to treatment pathways and personalize drugs and other treatment

GLASS

Execute

Deliver treatment

Monitor a patient's health status and autonomously administer drugs in optimal doses

diabeloop

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AI for Public Health

Measure

Identify risk

Find public health signals in non-traditional data sources

Decide

Recommend intervention

Recommend optimal influencers of public health behavior

Execute

Intervene

Respond at scale to misinformation using a chatbot

CDC

HEALER

World Health Organization

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AI for Administration

Measure

Identify Gaps

Identify claims fraud, underwriting risk, improper payment and abuse

SHIFT

Decide

Prioritize Action

Digitize and streamline manual prior authorization by payers

cohere HEALTH

Execute

Automate

Automatically generate claims denial appeals for health systems

encore health

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AI for Research

Measure

Reveal Causality

Identify biological causes of diseases through rapid literature searches, genomic databases or experimental data at scale

causaly

Decide

Identify drugs

Narrow down biological targets that can be modulated to treat diseases; Perform *insilico* drug design to identify efficacious drug molecules

Exscientia RECURSION

Execute

Prepare submissions

"One-Click BLA" for automating the very human-effort-intensive process of compiling documents for a biologics license application to the FDA

moderna

AI for Patient Engagement

Measure

Assess status

Assess structure, function, and signals to account for change in patient status

ŌURA zana

Decide

Personalize plan

Leverage data from similar patients along with individual patient signs to prescribe personalized intervention plan

FitnessAI

Execute

Communicate

Deliver intervention or plan in a systematic, engaging and understandable manner

buoy EMPAT SPEECH

The Perils

Responsible AI

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The Potential Perils

Concerns

- Safety
- Interpretability
- Privacy
- Fairness
- Accountability
- Reliability

Safeguards

- Guidelines and guardrails
- Explainable decision making
- Enhanced protection and limited access
- Manage and increased awareness of bias
- Transparency and multi-staged checks
- Periodic reassessment and monitoring

Summary

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Summary

- AI can help us meet three key challenges in health & well-care:
  - Skyrocketing costs
  - An explosion of data gathered on each patient / client
  - Insufficient labor to meet the needs of patients/ clients in need
- Potential dangers require thoughtful consideration and guardrails
- Need public awareness and open discussion to communicate change and build trust
- AI is a tool to enhance and augment human capability not replace clinicians & scientists

Q&A

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