

Artificial Intelligence in Medicine

Task Prediction and Linking to Specialists



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Script:

<https://chat.openai.com/>

Voice:

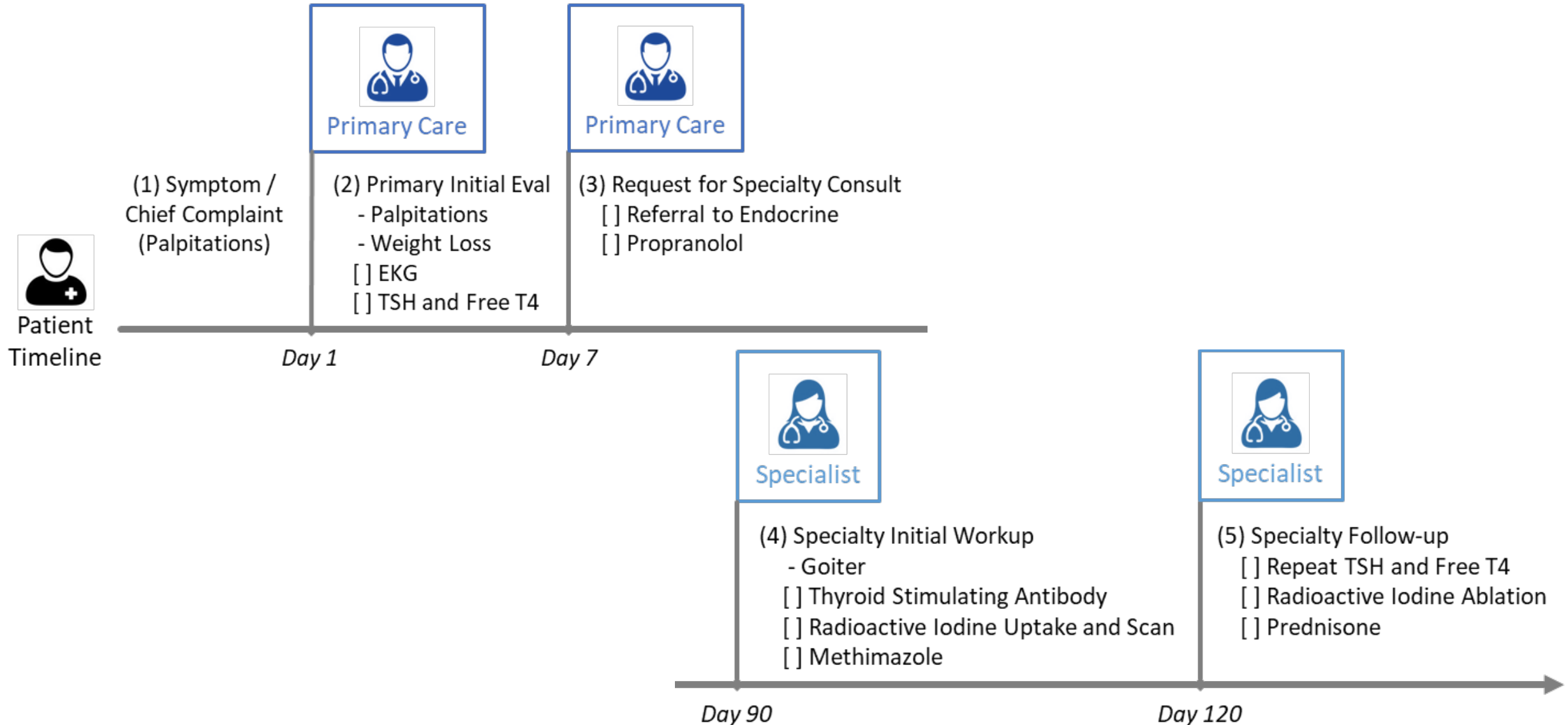
<https://elevenlabs.io/>

Talking Portrait:

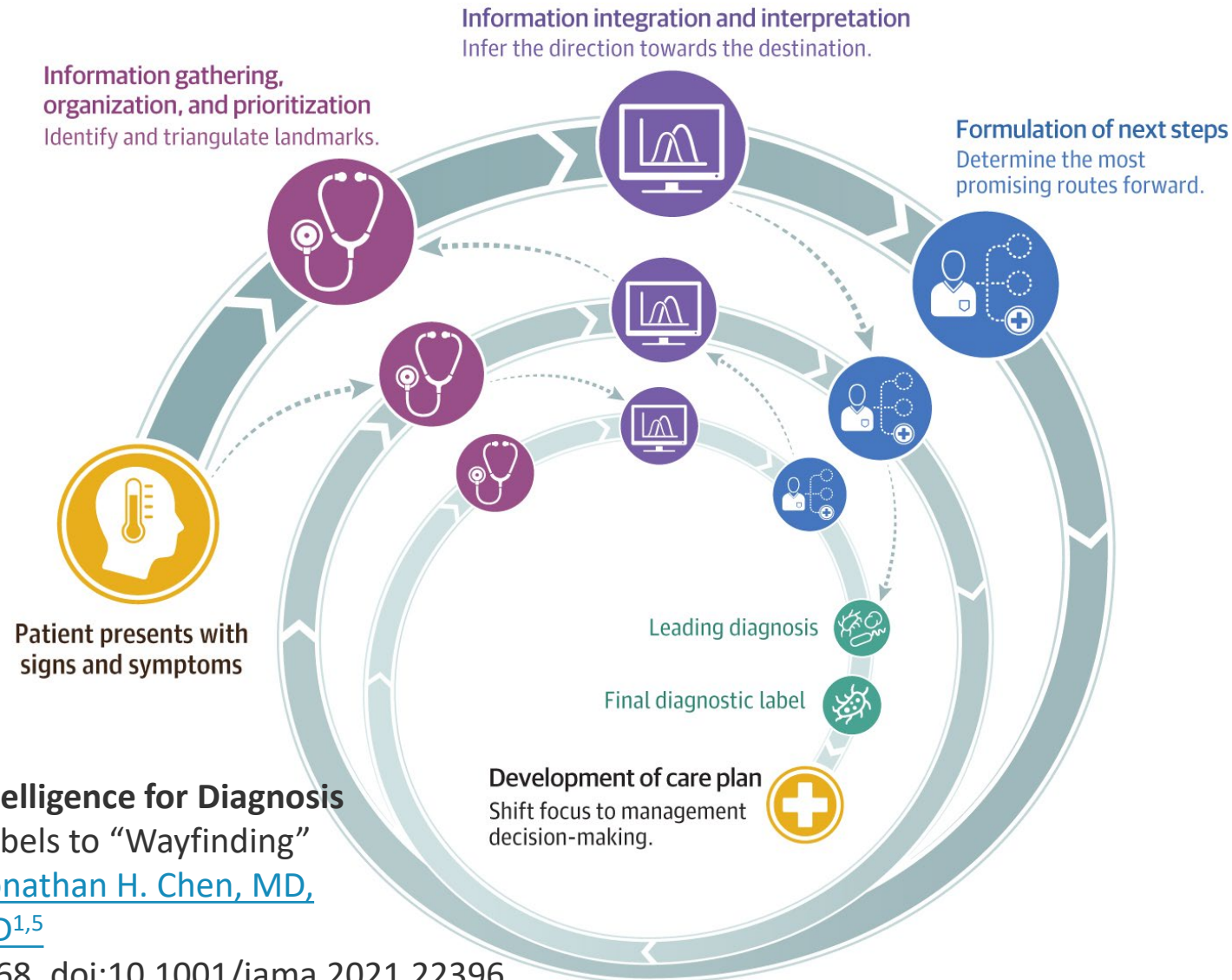
<https://www.d-id.com/>

<https://www.youtube.com/shorts/8kaqPA2-56U>

Sample Specialty Referral Workflow



Next-Gen AI for Diagnostic Wayfinding



Next-Generation Artificial Intelligence for Diagnosis

From Predicting Diagnostic Labels to “Wayfinding”

[Julia Adler-Milstein, PhD^{1,2}](#); [Jonathan H. Chen, MD, PhD^{3,4}](#); [Gurpreet Dhaliwal, MD^{1,5}](#)

JAMA. 2021;326(24):2467-2468. doi:10.1001/jama.2021.22396

Vision for Tiers of Clinical Consultation Support

In-Person Consult	Tier 1 – Comprehensive but time and space delay
Electronic Consult	Tier 2 – Remote engagement with days turnaround
Automated Guide	Tier 3 – Fully automated with immediate suggestions

Among similar patients referred to Endocrinology for reason: Hyperthyroidism

- Typical time until first consult appointment: 20-100 days
- Clinical orders that commonly occur around consultation you may consider now:

Labs

- ☐ 95% Thyroid Stimulation Hormone (TSH)
- ☐ 93% Free T4
- ☐ 85% Thyroid Stimulating Ab
- ☐ 80% Thyroid Peroxidase (TPO) Ab
- ☐ 66% Total T3

Imaging

- ☐ 76% Radioactive Iodine Uptake and Scan
- ☐ 32% Thyroid Ultrasound

Medications

- ☐ 88% Methimazole
- ☐ 65% Propranolol
- ☐ 8% Propylthiouracil

Referrals

- ☐ 47% Referral to Nuclear Medicine
- ☐ 45% Referral to Ophthalmology
- ☐ 12% Referral to ENT Surgery

Fountain of Creativity or Pandora's Box?

How Chatbots and Large Language Model Artificial Intelligence Will Reshape Medicine

Ron Li MD, Andre Kumar MD Med, Jonathan H. Chen MD PhD
JAMA Intern Medicine 2023

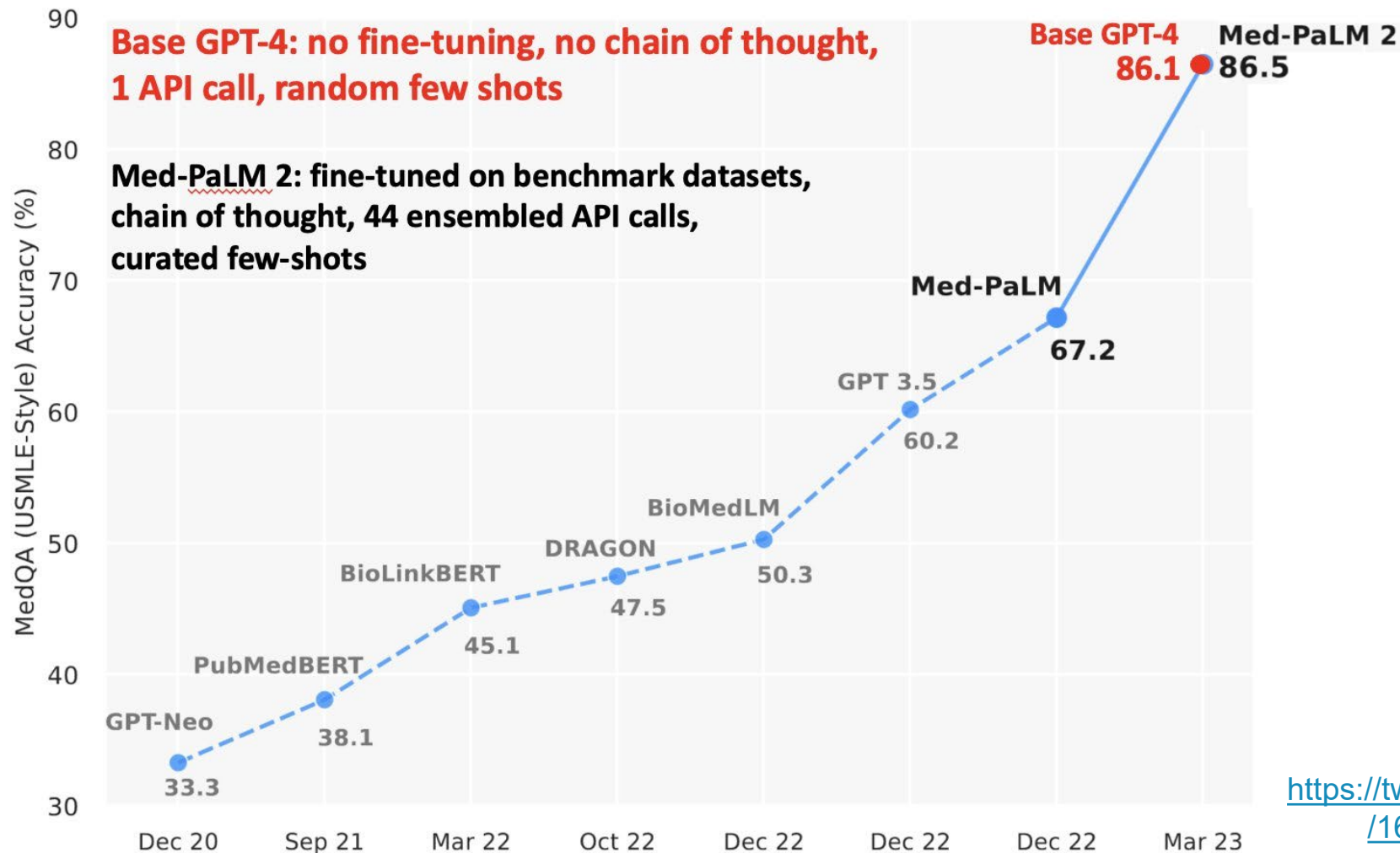


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Advancing Medical Q&A Accuracy

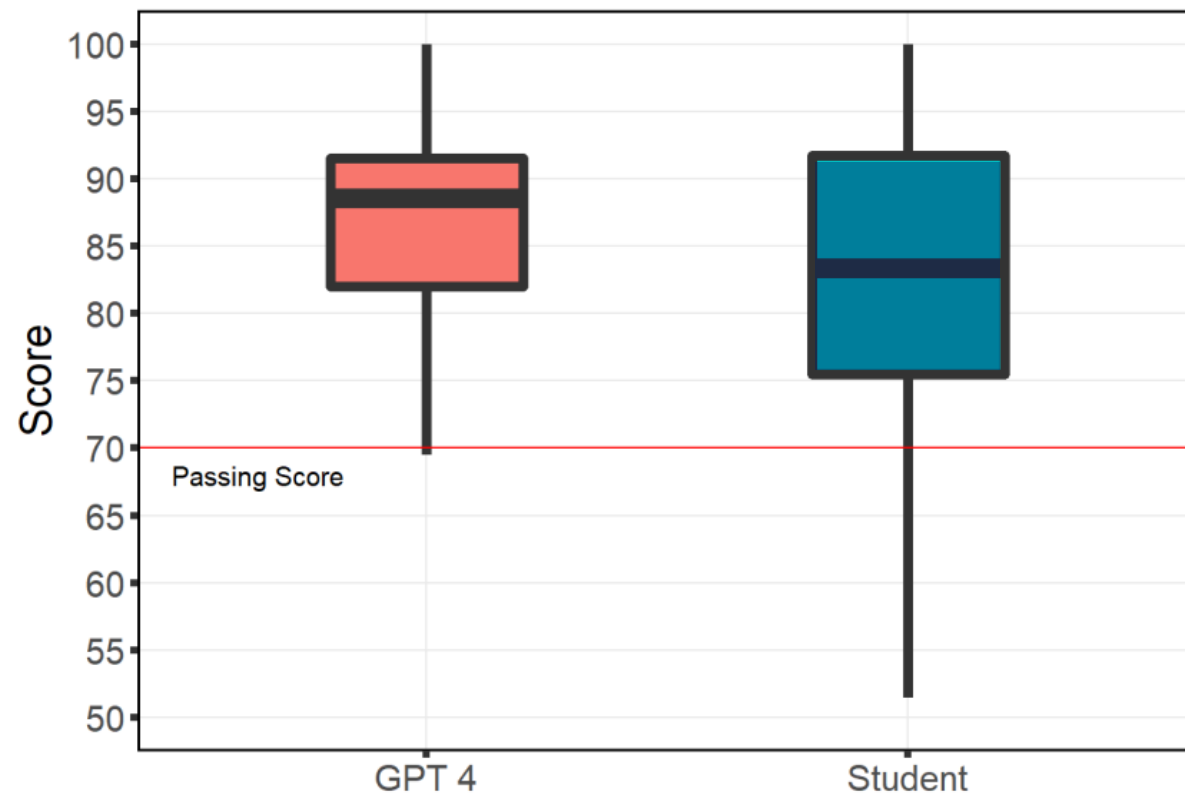
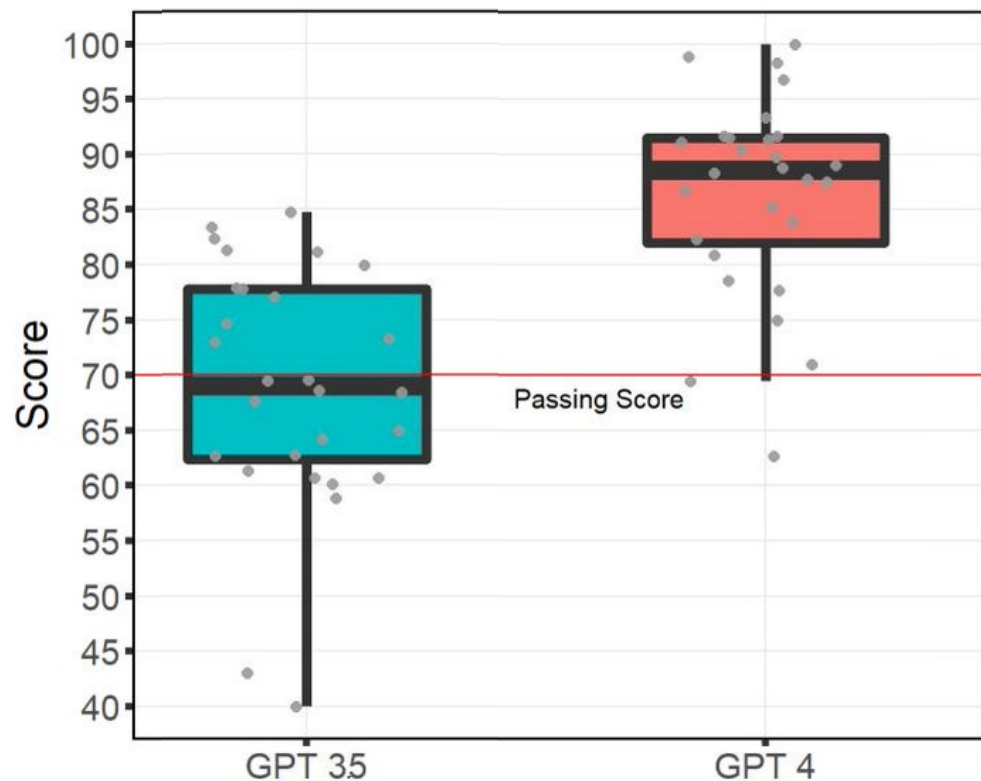


<https://twitter.com/HarshaNori/status/1661150609058467840?s=20>

<https://arxiv.org/abs/2303.13375>
<https://arxiv.org/abs/2305.09617>

Figure 1 | Med-PaLM 2 performance on MultiMedQA

Chatbot vs. Medical Student Clinical Reasoning



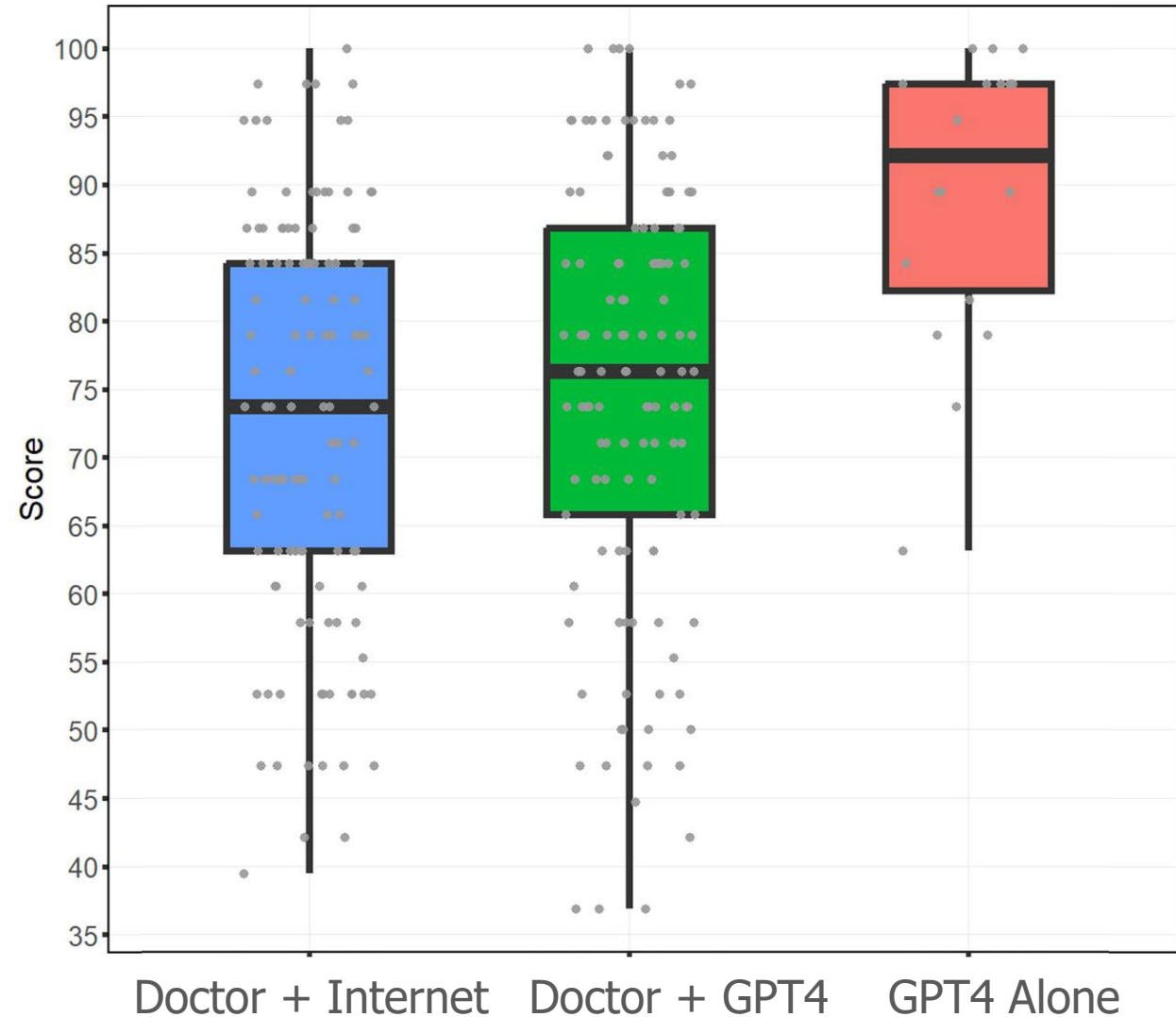
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Augmented Clinical Reasoning?

- Randomized Clinical Case Study
- Clinical Vignettes (6 Cases)
- 50 licensed physicians
- Consensus Grade on Reasoning
 - ⑩ Differential Diagnosis
 - ⑩ Factors Favoring
 - ⑩ Best Next Steps



Replacements?

Any doctor that
COULD be replaced by a computer,
SHOULD be replaced by a computer.
– Warner Slack

While AI is NOT going to replace doctors,
those that learn how to use AI
are likely to replace those who do not.
– Curt Langlotz

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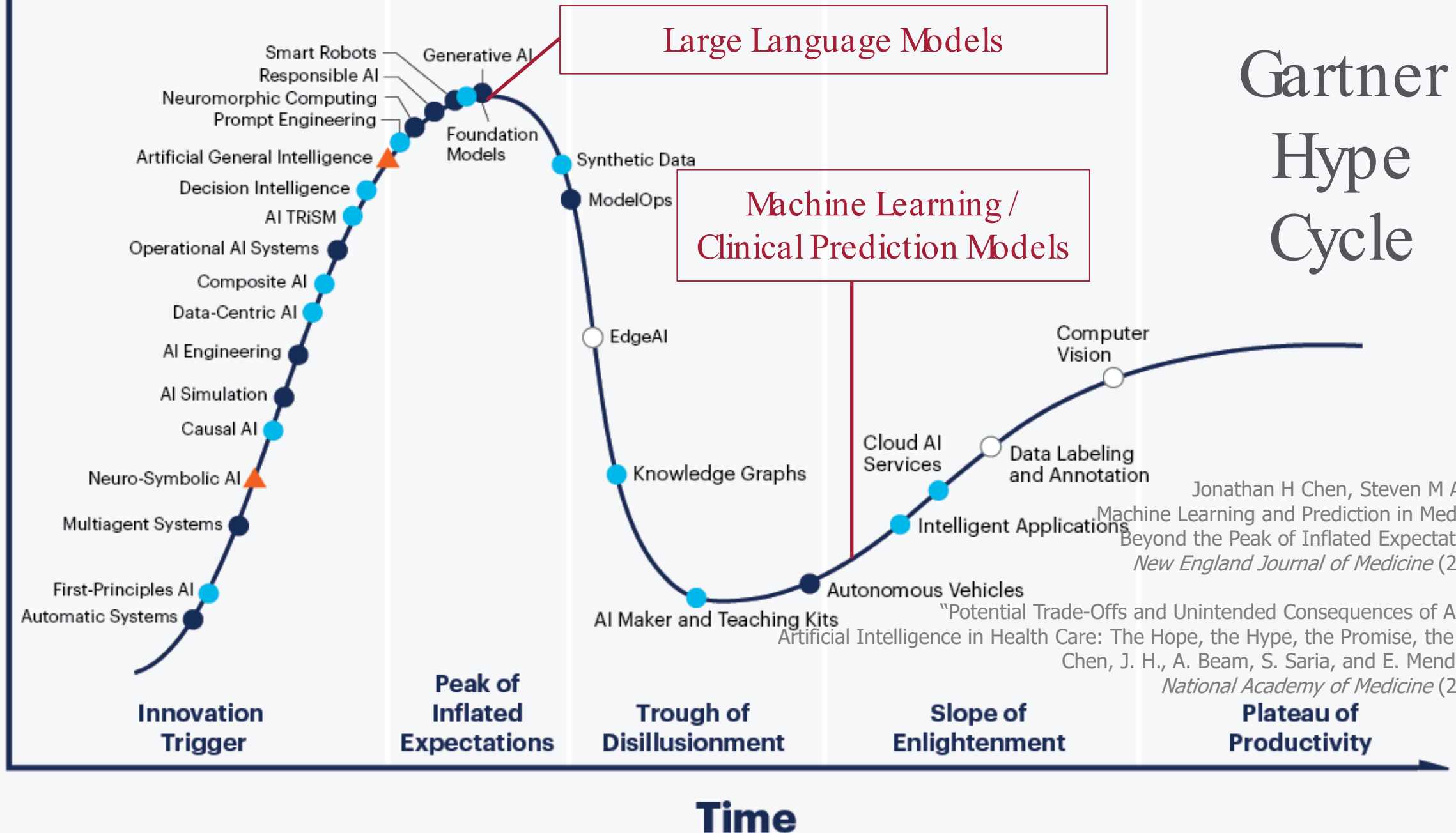
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Gartner Hype Cycle

Expectations



Plateau will be reached:

○ less than 2 years ● 2 to 5 years ● 5 to 10 years ▲ more than 10 years ⊗ obsolete before plateau As of July 2023

<https://www.gartner.com/en/articles/what-s-new-in-artificial-intelligence-from-the-2023-gartner-hype-cycle>

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