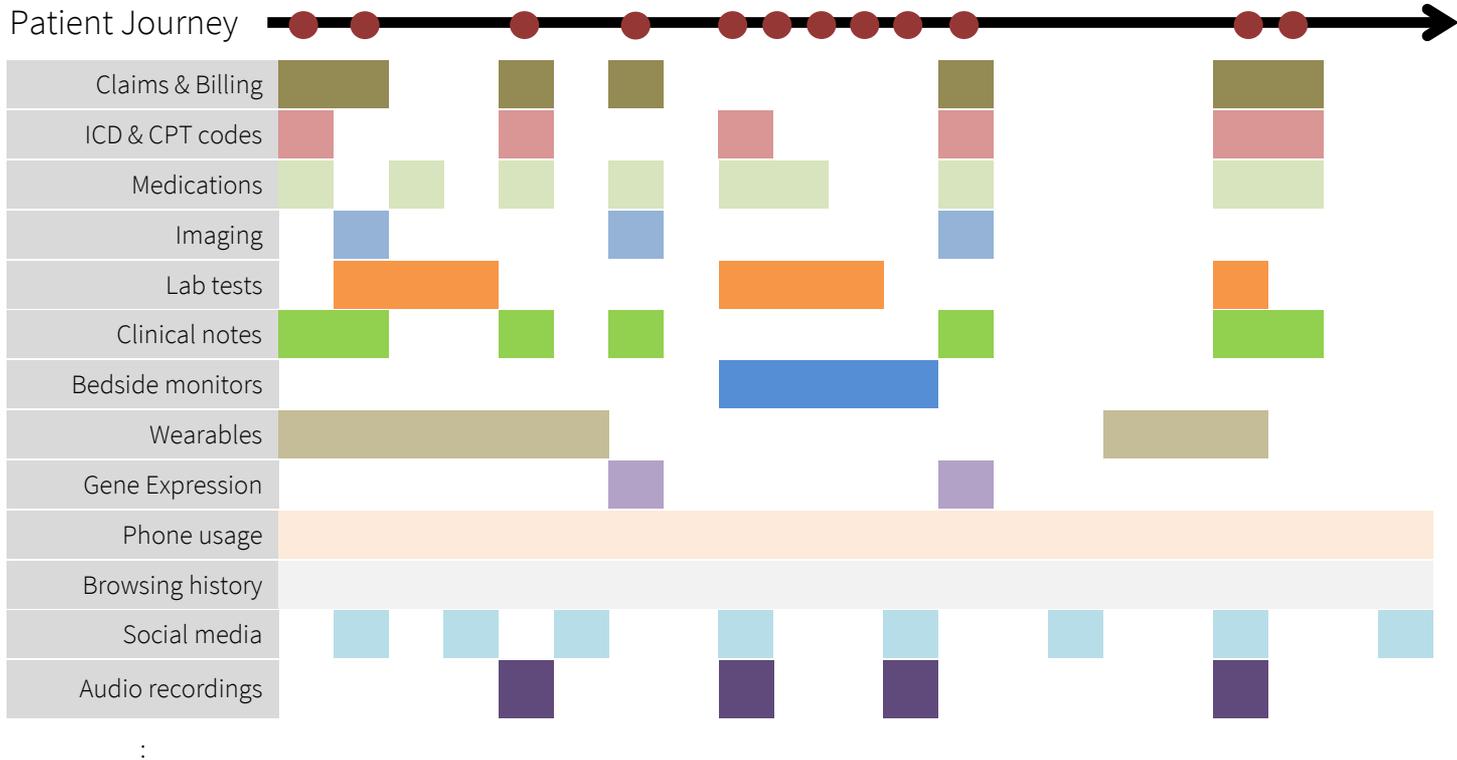


What it takes to do good AI in healthcare

Nigam Shah

Chief Data Scientist, Stanford Healthcare
Professor of Medicine, Stanford University

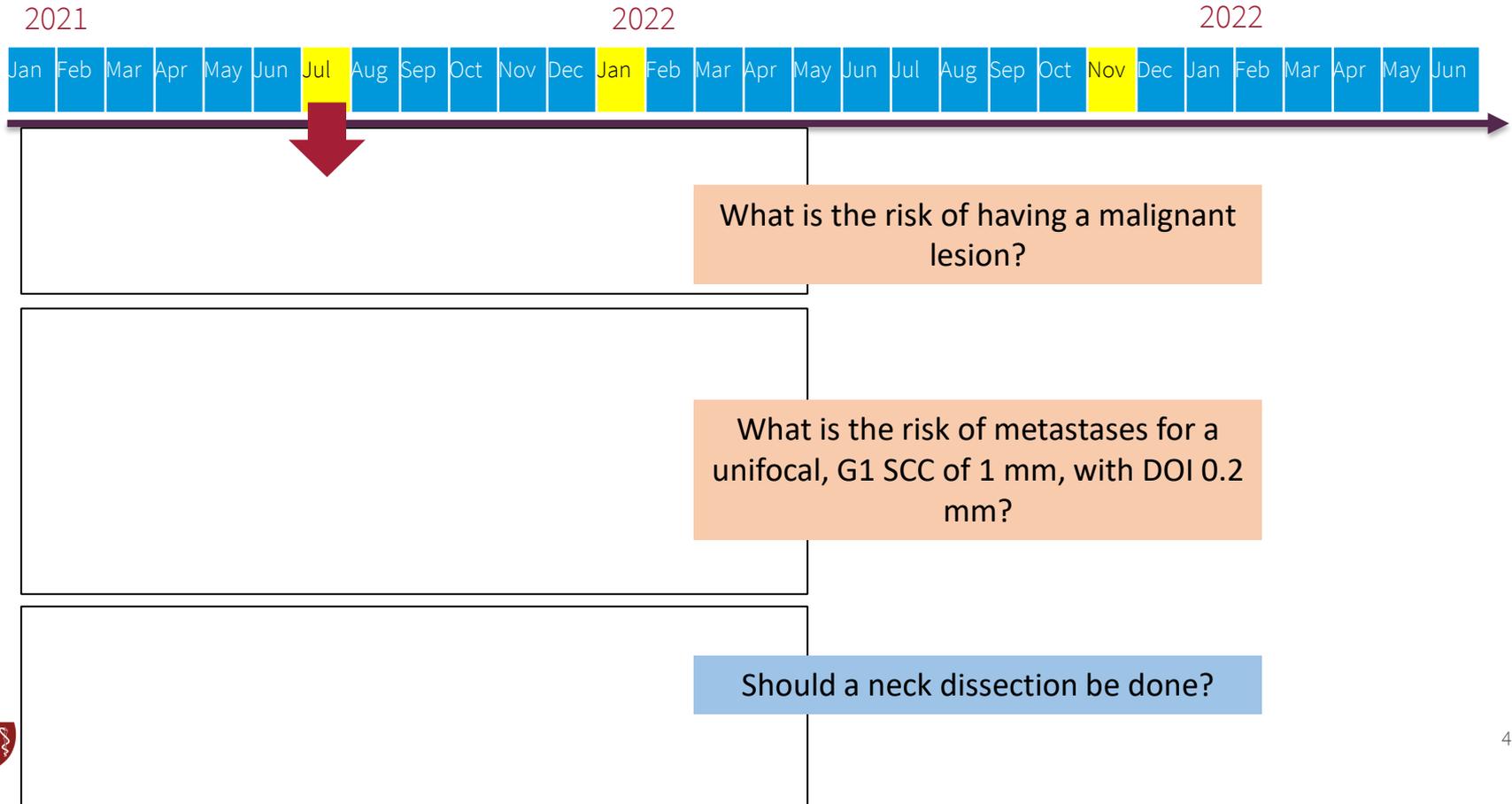
Patient timeline and what we do with it



Patient timeline and what we do with it – Act 1



Questions close to home



Patient timeline and what we do with it – Act 2



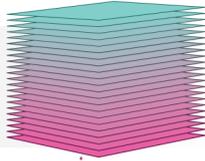
Models predict, humans act

A Framework for Evaluating Fair, Useful, and Reliable AI Models in Health Care Systems

Which “Language model” do you mean?

Commercial LLMs are trained using large public datasets via self-supervision.

“The Pile” is the most used public dataset that is constructed from 22 diverse, high-quality sources such as PubMed Central, Wikipedia, GitHub, ArXiv, and others.



Self-supervision to learn patterns to predict the next word and predict the next sentence

A user submits an instruction to an LLM, and the LLM relies on data seen during training to respond.

Instruction

When was Louis Pasteur born?

Response

1822

Write a story about a lonely cell.

Once upon a time...

A user can submit both an instruction and contextual data to ground the response.

Instruction

Summarize this news article.

Context

Text of a news article

Response

Wild orcas disrupted a boat race...

Summarize this patient's health history.

EHR

Ms Kim is 42...



“Language”: Prose from reddit, Wikipedia etc. ...

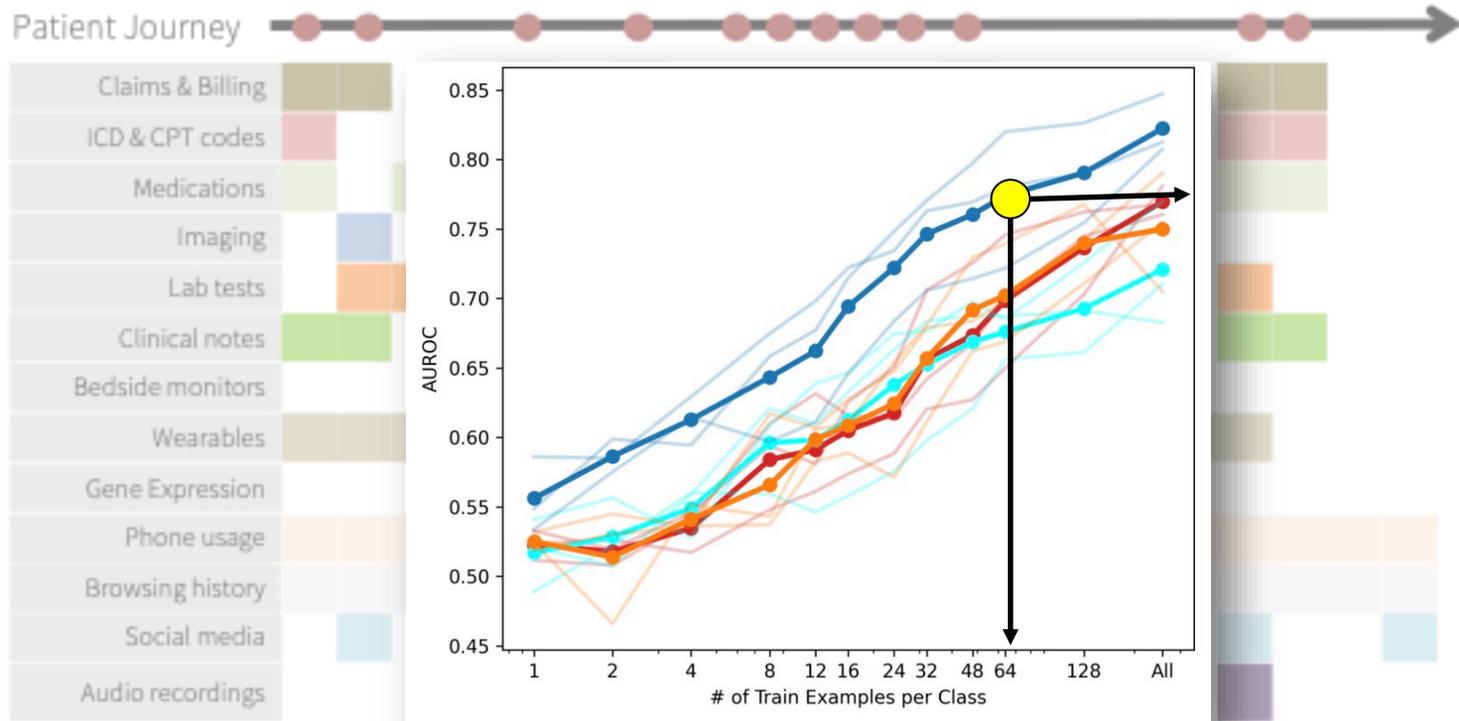
Talking with the patient timeline – Act 3

The screenshot shows the ChatEHR interface with the following elements:

- Session start time:** Tue May 20 2025
- Time Range:** 1 Year lookback (05/20/2024 — 05/20/2025)
- Data sources (8):** clinical-notes, care-everywhere, diagnostic-reports
- Refresh button:** Refresh
- Chat Message 1:** "Hi 🤖 I'm ChatEHR! Here to help you securely chat with the patient's medical record. Provide feedback by clicking 👍"
- Question:** "Has this patient had a colonoscopy?"
- Answer:** "Yes, the patient has had a colonoscopy. The procedure was performed on 5/22/2024 and findings indicated that the terminal ileum appeared normal with biopsies taken for histology for evaluation of microscopic colitis. The report states that there were no significant abnormalities in the colon." (Generation time: 5/20/2025, 10:39:24 AM - Lookback: 1 Year)
- Question:** "Summarize the report of the colonoscopy?"
- Answer:** "The colonoscopy performed on 5/22/2024 revealed the following key findings:
 - The terminal ileum appeared normal.
 - Normal mucosa was found throughout the entire examined colon.
 - Biopsies for histology were taken from the entire colon for evaluation of microscopic colitis.
 - The examination was otherwise unremarkable on both direct and retroflexion views.
 - There were no significant abnormalities detected in the colon.Overall, the procedure was tolerated well by the patient without any immediate complications, and the recommendation was to await pathology results and to repeat the colonoscopy for screening purposes in 10 years." (Generation time: 5/20/2025, 10:39:50 AM - Lookback: 1 Year)

"ChatEHR saved the day today in hemepath. We had a very challenging lymph node biopsy consult. 6 pathologists looked at it and after almost 70 immunostains could not reach a diagnosis beyond "malignant neoplasm of uncertain differentiation." Yesterday I was consulted to advise on whether the molecular findings could assist with the diagnosis. I saw a UV damage signature in the molecular data so I asked ChatEHR if the patient had any history of skin lesions. We had a back and forth for a bit and it pulled up an **outside diagnosis of sarcomatoid squamous cell carcinoma which completely explained the findings in the lymph node.** The case was shown to dermpath, a few stains were done to confirm, and the patient now has a definitive diagnosis of poorly differentiated (sarcomatoid) squamous cell carcinoma. **If that doesn't prove the value of chatEHR, I don't know what does! "**

Patient timeline and what we do with it – Act 4



Patient timeline and what we do with it – Act 5

