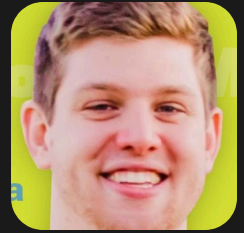


EP 3

May 24, 2025 · 01:03:37

Ben Lengerich - Machine Learning & AI in Healthcare

Ben Lengerich — ML Researcher



Ben Lengerich of the University of Wisconsin–Madison on models that adapt to each patient and still explain themselves, and why the odd patterns in hospital data point to better care.

2×

as many surprises found by an LLM as by expert analysts [43:54](#)

46

risk curves given to the doctors and to the model alike [44:43](#)

2,000

citations for the 2018 deep learning review he co-wrote [3:34](#)

40

students in the first course he taught as a professor [32:23](#)

KEY TAKEAWAYS

1 Keep the model readable

A context-adaptive model keeps a linear model's coefficients and lets them shift with each patient's history. [9:59](#)

2 Accuracy is not handed down

Accuracy is a metric people choose and are tempted to flatter. Interpretability lets you check what a model has really learned. [14:07](#)

3 Treated patients can look healthy

In hospital data the lowest mortality sits with very high creatinine, because those are the patients on dialysis. [36:29](#)

4 Surprises show where care can improve

Where a treated, sicker group does better than a healthy one, some other group is getting worse care than it could. [40:05](#)

5 A model does not conserve effort

Doctors found better-grounded anomalies; the LLM checked every feature and found almost twice as many. [43:35](#)

"Accuracy is not a metric given to us by God."

Ben Lengerich · [14:07](#)

CHAPTERS



0:00	Intro	1 min	24:27	Personal without overfitting	3 min
0:49	What computational biology is	1 min	27:27	Industry or academia	2 min
1:34	Advice for students	2 min	29:05	Starting a lab and teaching	5 min
3:18	Deep learning in biology since 2018	4 min	34:07	When sick patients look healthy	6 min
6:49	The Lengerich lab	1 min	40:26	Catching paradoxes automatically	6 min
8:14	Context-adaptive models	4 min	46:16	Where this fits in a hospital	3 min
11:50	Why interpretability matters	5 min	49:41	Who pays for the research	5 min
16:37	Why large models are hard to read	3 min	54:34	Where the field is strongest	5 min
19:45	Do LLMs reason?	5 min	59:28	Medicine in ten years	4 min

TERMS EXPLAINED

Computational biology

Building computational methods that turn biological data into understanding.

Interpretability

Being able to see why a model gives the answer it does.

Confounding

A hidden factor that makes two things look causally linked when they are not.

Context-adaptive model

A simple model whose coefficients change with each patient's context.

Foundation model

A very large model trained on broad data and adapted to many tasks, such as an LLM.

Serum creatinine

A blood measure of kidney function; high levels can signal kidney failure.

MENTIONED IN THIS EPISODE

Adaptive Inference Lab

Contextualized ML

LLMs find surprises (2023)

Deep learning review (2018)

MIMIC

Listen, watch or download the transcript: aarsentyev.com/podcast/ep3-ben-lengerich

Each time opens the video at that moment. Hosted by Arseniy Arsenyev. A summary of a conversation, not medical advice.