AI in Astronomy: A Reality of Science in 2026

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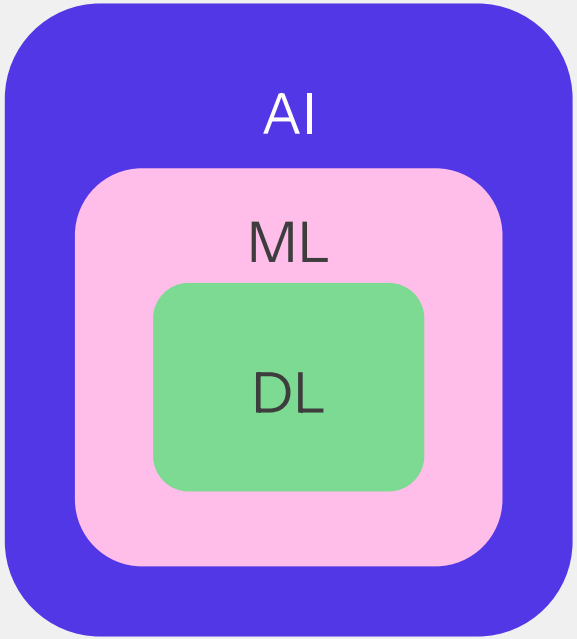
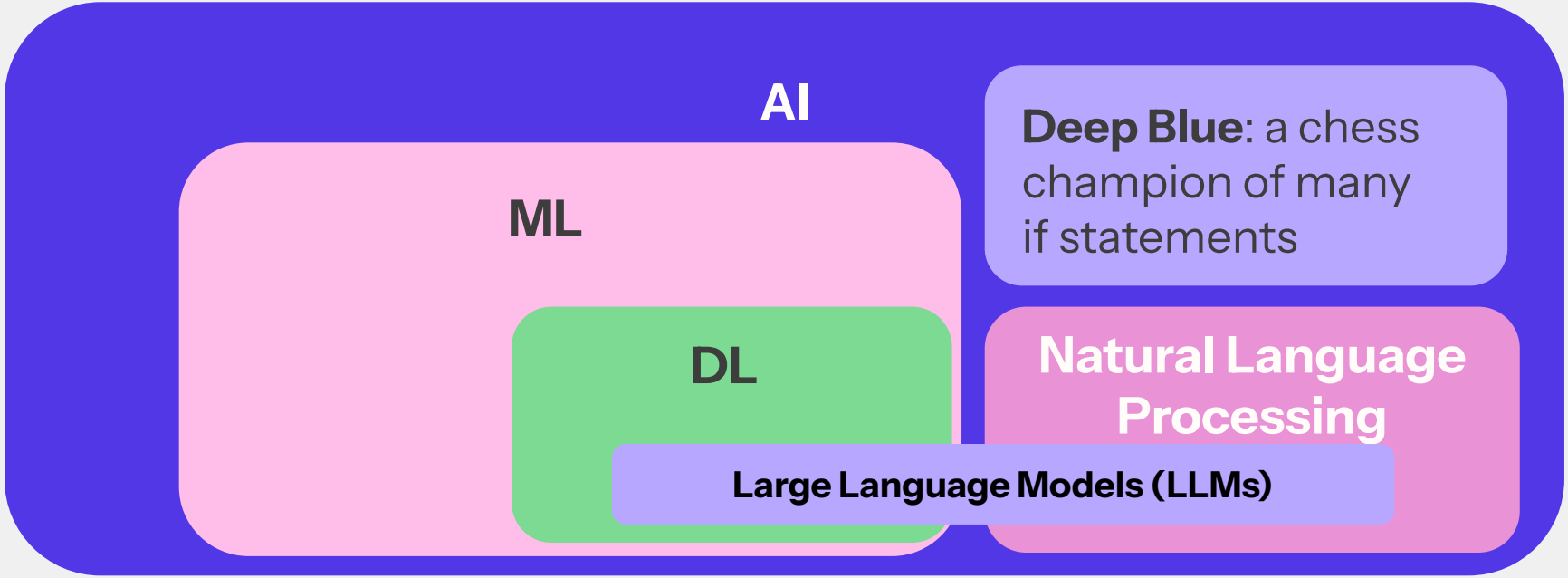
What is AI?

“Artificial intelligence”	A general term for algorithms/models that attempt to mimic human intelligence
“Machine Learning”	A subset of AI that attempts to make machines learn from data
“Deep Learning”	A subset of ML that uses multi-layer neural networks (NNs)



The AI Landscape



AI Use Cases

Research Applications

- Handling large survey data
- Exploring large parameter spaces
- Directing follow-up observations for time-domain astro.

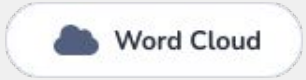
Everyday “Assistantship” Use

- Summarizing papers
- Reading/writing emails
- Writing code
- Writing proposals and papers
- Explaining complex problems

Teaching & Outreach

- Producing lecture materials
- Grading homeworks and exams
- Solving homework problems
- Creating engaging posters

How do you all use AI?



Common Underlying AI Types

Research Applications

- primarily ML methods
- multi-level NNs & CNNs
- transformer architecture

Everyday "Assistantship" Use

- Large Language Models (LLM)
- ex. ChatGPT, Claude, Grok
- astroBERT

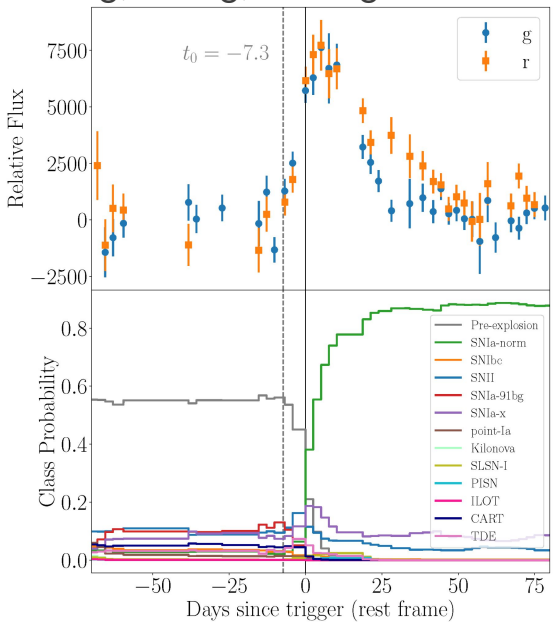
Teaching & Outreach

- Large Language Models (LLM)
- "generative AI"

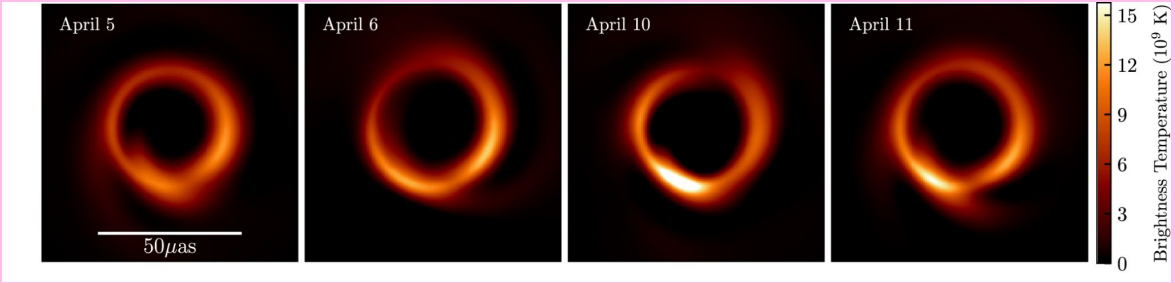
AI Wins

Research Applications

Wang, Qiang, & Yang (2025)

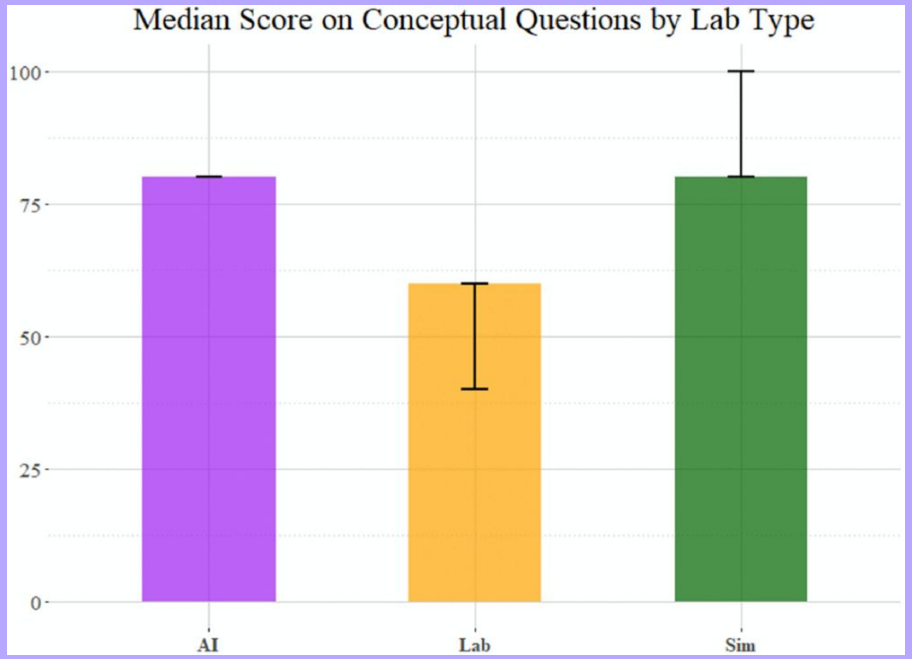


Medeiros et al. (2023)



AI Wins

Teaching & Outreach



AI found to help students learn physics concepts more than traditional labs

Ben-Zion et al. (2026)

The Caveats of AI-usage

A MODEL IS ONLY AS GOOD AS ITS DATA

We need interpretability

- how do we tell coincidental vs causal relationships?
- how do we evaluate AI models' accuracy?

Lieu (2025)

If you don't use it, you lose it

- reliance on LLMs decrease neural connectivity
- use of LLMs decreases independent creativity

Kosmyna et al. (2025)
Kumar et al. (2025)

Can people trust computers?

- 66% of adults worried about inaccurate info. from AI
- 57% of the public worried about loss of human connection

Pew Research (2025)

The Caveats of AI-usage

Questions?

1. https://iopscience.iop.org/article/10.3847/1538-4357/acaa9a
2. https://www.mdpi.com/2218-1997/11/11/355
3. https://journals.aps.org/prper/abstract/10.1103/s8dy-kqy5#s3
4. https://www.mdpi.com/2218-1997/11/6/187
5. https://arxiv.org/abs/2506.08872
6. https://arxiv.org/pdf/2410.03703
7. https://wallpapersden.com/pc-marvel-s-spider-man-remastered-wallpaper/