

Looking Forward

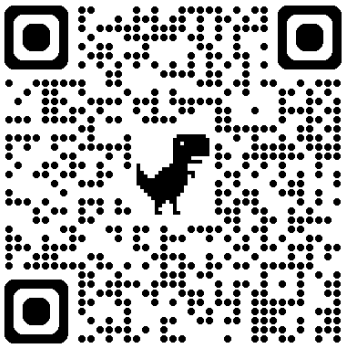
CSE 473: Introduction to Artificial Intelligence



Administrivia

ANNOUNCEMENTS

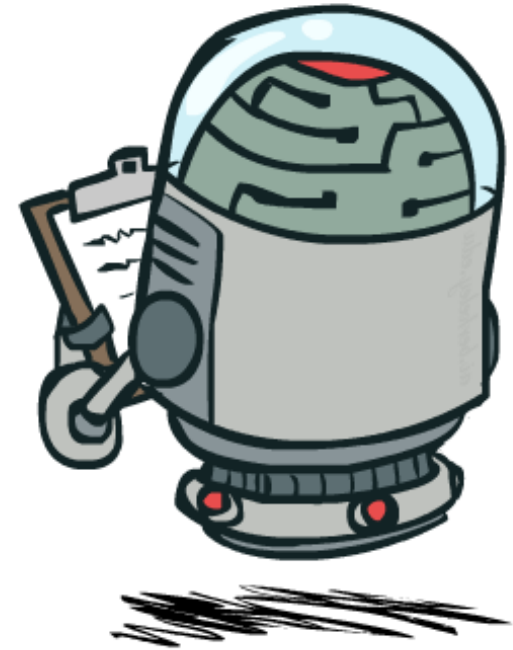
- **Course Evaluation!**



uw.iasystem.org/survey/328718

ASSIGNMENTS

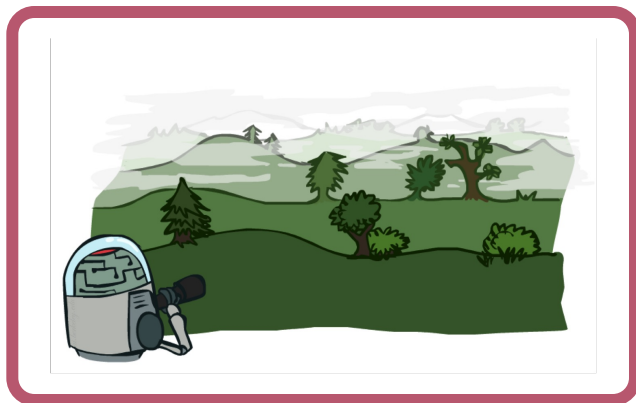
- Submit **Homework 4** by tonight!
 - No late period – HW4 must be turned in by 8.21



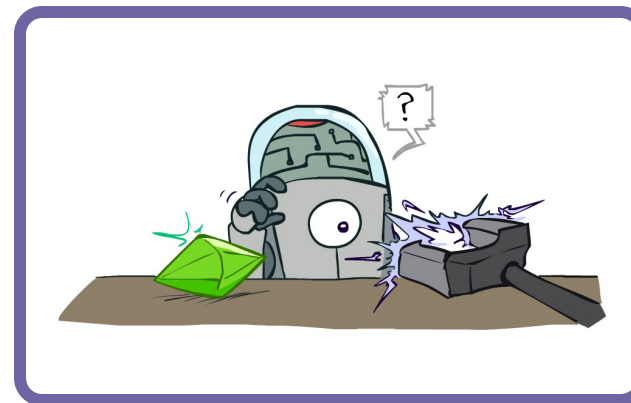
CSE 473: A Summary

FOUNDATIONS

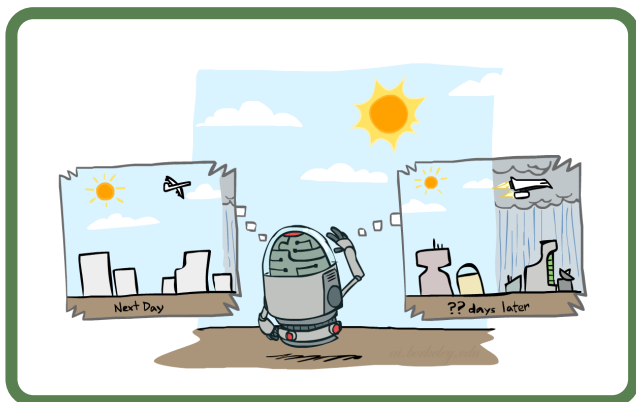
Search



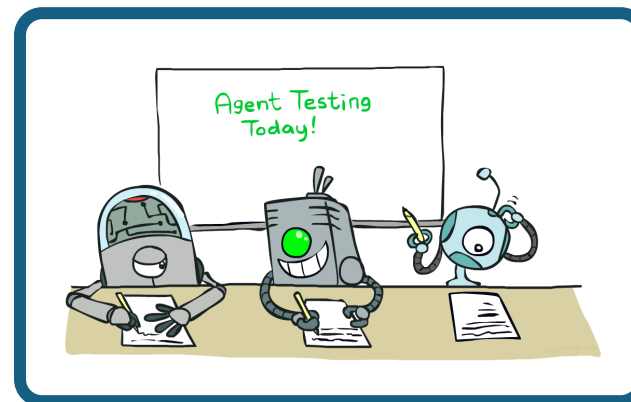
Reinforcement Learning



Modeling



Machine Learning



Minecraft Pathfinding

EXAMPLE

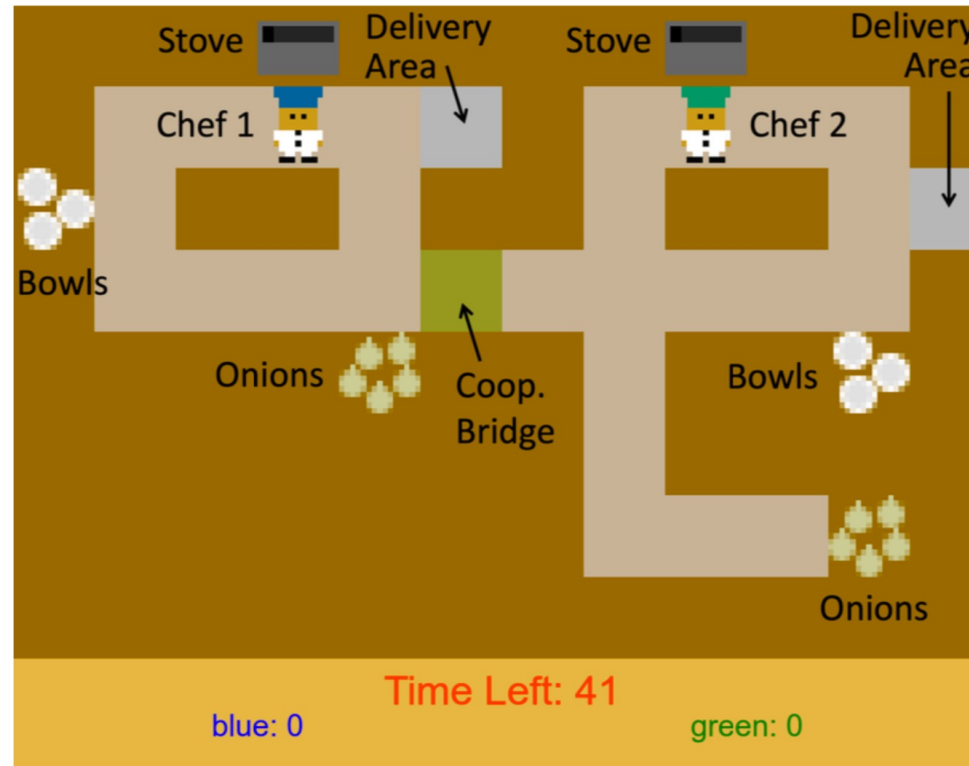


Inferring Values with Inverse RL



EXAMPLE

“Culturally-attuned AI: Implicit learning of altruistic cultural values through inverse reinforcement learning”



In the Overcooked video game, players work to cook and deliver as much onion soup as possible. In the study's version of the game, one player can give onions to help the other who has further to travel to make the soup. The research team wanted to find out if AI systems could learn altruism by watching different cultural groups play the game. Photo: [Oliveira et al./PLOS One](#)

Self-Driving

EXAMPLE

LIDAR UNIT

Constantly spinning, it uses laser beams to generate a 360-degree image of the car's surroundings.

RADAR SENSORS

Measure the distance from the car to obstacles.

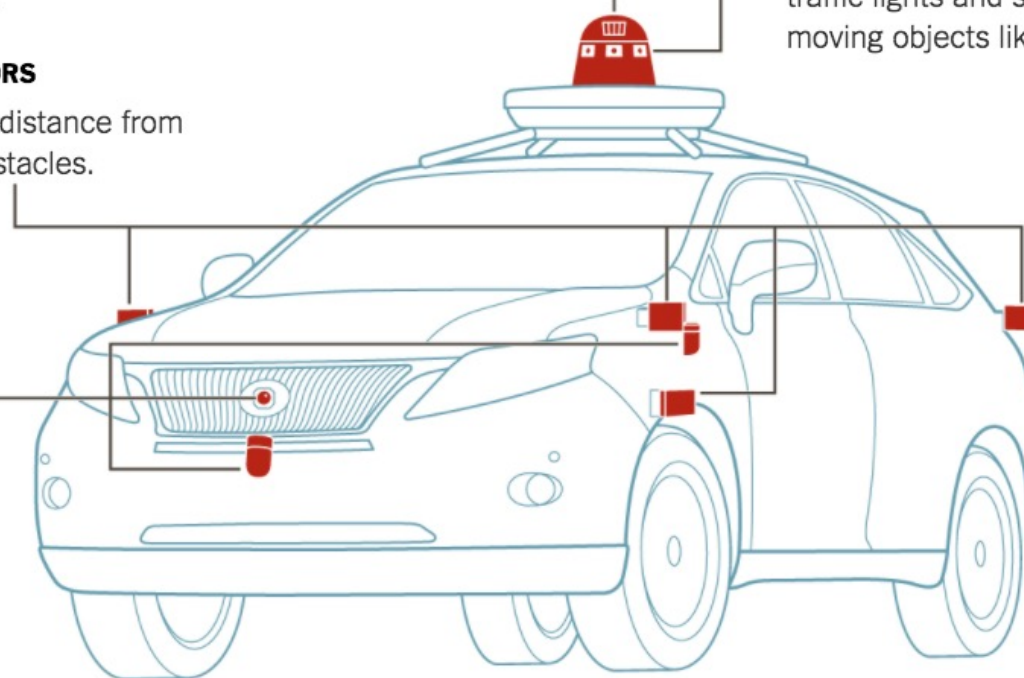
ADDITIONAL LIDAR UNITS

CAMERAS

Uses parallax from multiple images to find the distance to various objects. Cameras also detect traffic lights and signs, and help recognize moving objects like pedestrians and bicyclists.

MAIN COMPUTER (LOCATED IN TRUNK)

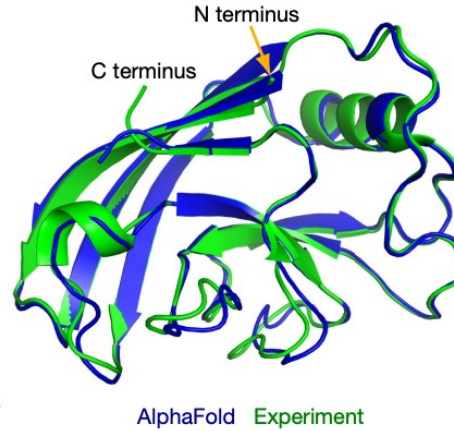
Analyzes data from the sensors, and compares its stored maps to assess current conditions.



The New York Times

Alpha Fold

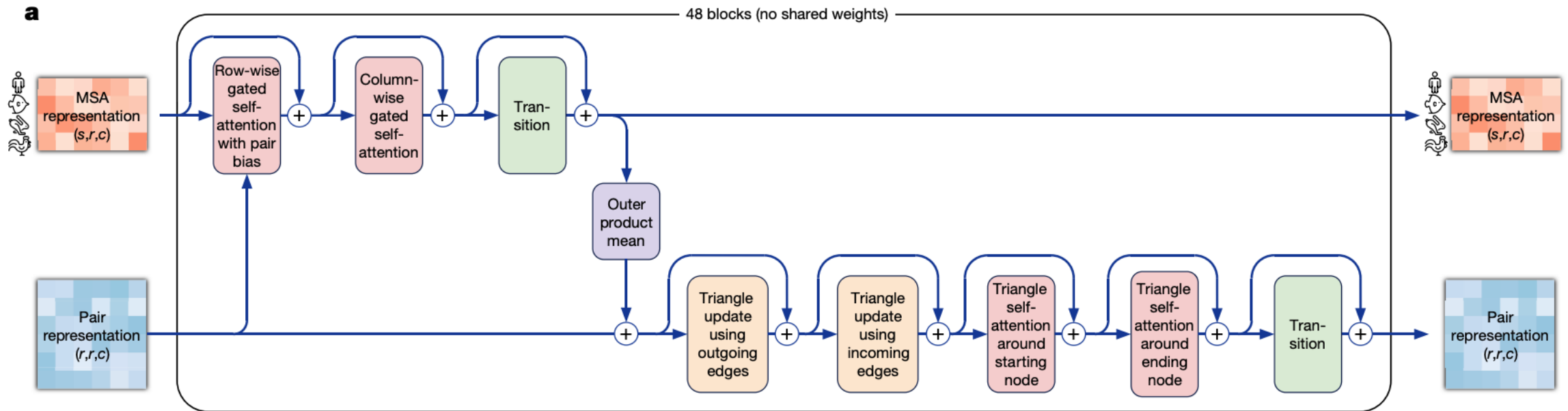
EXAMPLE



Inputs and data sources

Inputs to the network are the primary sequence, sequences from evolutionarily related proteins in the form of a MSA created by standard tools including jackhmmer⁶⁰ and HHBlits⁶¹, and 3D atom coordinates of a small number of homologous structures (templates) where available. For both the MSA and templates, the search processes are tuned for high recall; spurious matches will probably appear in the raw MSA but this matches the training condition of the network.

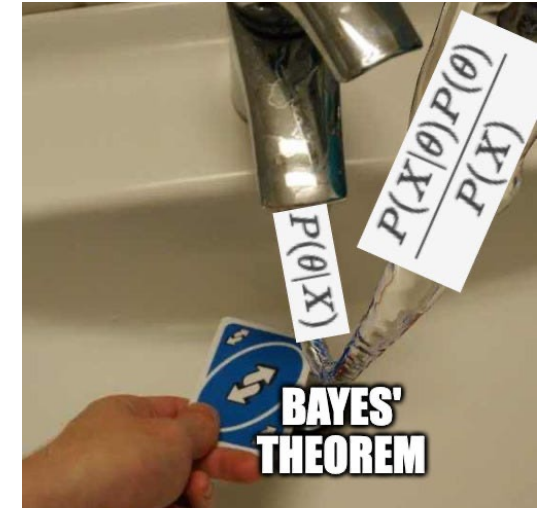
One of the sequence databases used, Big Fantastic Database (BFD), was custom-made and released publicly (see 'Data availability') and was used by several CASP teams. BFD is one of the largest publicly available collections of protein families. It consists of 65,983,866 families represented as MSAs and hidden Markov models (HMMs) covering 2,204,359,010 protein sequences from reference databases, metagenomes and metatranscriptomes.



CSE 473 in Memes



CONTEXT



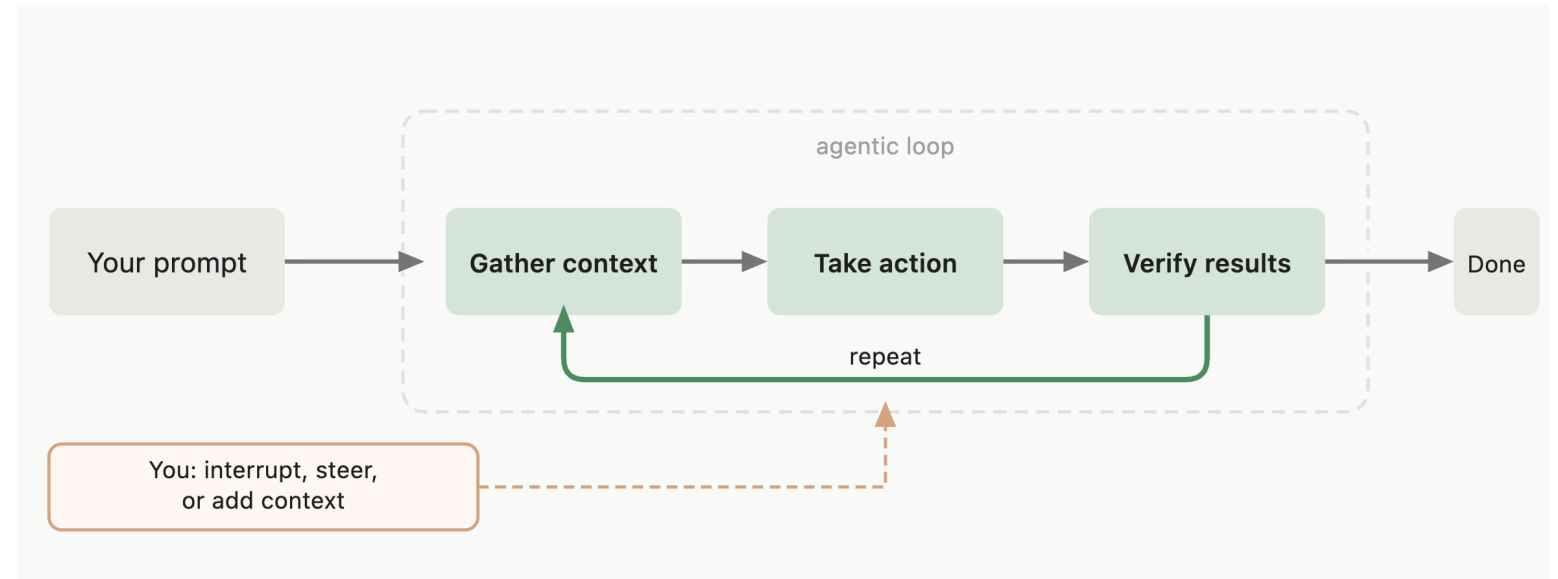
What's Next for AI?



What people think it is...



What it actually is...



"Agentic" AI

Claude
Mythos 

GPT-5.6 Cyber

OpenAI cyber models broke out of training environment to hack Hugging Face

Meta becomes latest firm to say its AI hacked another company



Pushing the Boundaries

Introducing Anthropic's AI for Science Program



Microsoft Research
AI for Science

Gemini for Science
Powering a new era of discovery with AI

"AI for Science"

What's Next for You?

CONTEXT



CSE 473

CSE 473
Introduction to AI

CSE 446/546
Machine Learning

CSE 447
NLP

CSE 478
Autonomous Robotics

CSE 480
Computer Ethics

CSE 493
Human-AI Interaction

CSE 542
Reinforcement Learning

CSE 493G1/543
Deep Learning

CSE 547
ML for Big Data

CSE 493/554
Systems for ML

CSE 574
Explainable AI

CSE 582
Ethics in AI

Looking Forward

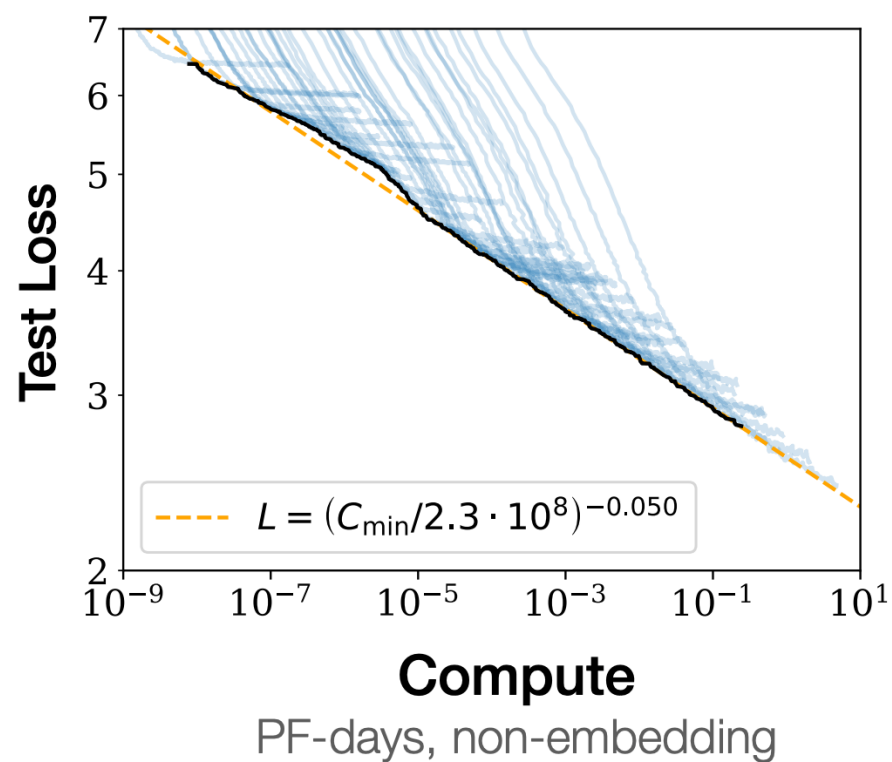
Open Questions in AI

Scaling

BIG PICTURE



Are “scaling laws” actually “laws”?



[Kaplan et al. \(2020\)](#)

Real-World Grounding

BIG PICTURE

How far can we go with a data-only approach?

IDEAS

IDEAS + AI +

World Models Are AI's Next Frontier

ADD TIME ON GOOGLE

by [Celine Herweijer](#) +

Celine Herweijer is Visiting Professor in Energy and Geopolitics at LSE and former Group Chief Sustainability...

JUL 15, 2026 3:00 AM PT



Yuichiro Chino—Getty Images

TIME (2026)

Resource Efficient AI



BIG PICTURE

How much of our resources do we want to dedicate to AI?



Seattle passes moratorium on new data centers amid national backlash

June 9, 2026 at 5:24 pm

[Listen to article](#)

[Make us a preferred source](#)



Power lines and power lines on a street in Seattle, at the intersection of East Olive Street in Seattle, on Thursday, Feb. 14. (Karin Doran / The Seattle Times)

Long-Term Consequences



BIG PICTURE

What happens when everything is AI?

Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task[△]

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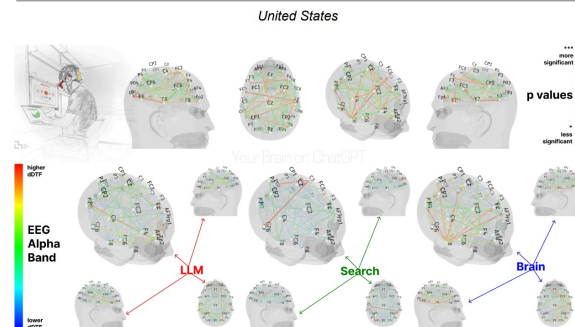


Figure 1. The dynamic Direct Transfer Function (dDTF) EEG analysis of Alpha Band for groups: LLM, Search Engine, Brain-only, including p-values to show significance from moderately significant (*) to highly significant (***)

¹ Nataliya Kosmyna is the corresponding author, please contact her at nkosmyna@mit.edu
[△] Distributed under [CC BY-NC-SA](https://creativecommons.org/licenses/by-nc-sa/4.0/)

Two-hour learning? AI-powered Alpha School lands in Seattle region

BY TODD BISHOP on Jun 10, 2026 at 4:35 pm

Share



Alpha School has leased space in this building in Kirkland for its first Seattle-area school. (GeekWire Photo / Todd Bishop)

Chat's Take...



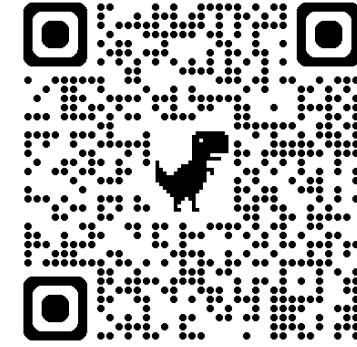
EXAMPLE

	Claude	GPT	Gemini
Scaling Laws?	✓	✓	✓
Capable autonomy?	✓		
Alignment?	✓	✓	✓
Economy and Labor?	✓	✓	✓
Regulation?		✓	
Grounding?			✓



Ask Me (Almost) Anything

that's it for 473!



uw.iasystem.org/survey/328718

SUMMARY

- Applications
- AI's Roadmap
- Open Questions

UPCOMING

- It's up to you now!



CSE 473

REMINDERS

- Complete **Practice Problem 23**
- Fill out your **Course Evaluation!**
- Do **Homework 4** (submit by 8.21)