Multimodal Algorithmic Reasoning Workshop (MAR-NeurIPS 2025)

December 6 / 7th, 2025, San Diego

Held in conjunction with NeurIPS 2025

https://marworkshop.github.io/neurips25/

CALL FOR CONTRIBUTIONS

Large AI frameworks have been increasing in their data modeling abilities at an ever more vigor in recent times, with compelling applications emerging frequently, many of which may even appear to challenge human intelligence. Yet despite such impressive performance, there remain open questions about whether these models include the foundations of general intelligence, or whether they perform these tasks without human-like understanding. This necessitates development of better tools for assessing these models in tandem with developing the models themselves.

This workshop focuses on the topic of multimodal algorithmic reasoning, where an agent needs to assimilate information from multiple modalities towards deriving reasoning algorithms for complex problem solving. Some real-world examples of such problems include: i) chain-of-thought reasoning using multiple modalities, ii) solving Olympiad-type vision-and-language problems, and iii) distributed agentic reasoning and tool use, among others. Previous editions of this workshop emphasized the challenges in building generalizable AI towards solving vision-and-language problems. However, in the last year, we have seen rapid advances in AI capabilities that better bridge across modalities, bringing both optimism about superhuman capabilities and skepticism about the limits of current approaches. This is an opportune moment to explore critical challenges, including new architectures for visual reasoning, data generation via self-play, and the theoretical limits of reasoning in large models. Through talks from outstanding researchers and faculty, we hope to dive deep into this exciting topic at the intersection of theory, multimodal machine learning and cognitive science to understand what we have achieved thus far in machine intelligence and what we are lacking in relation to the human way of thinking, towards finding the missing rungs on the ladder to truly intelligent reasoning.

IMPORTANT DATES & DETAILS

Submission deadline: August 31 AoE

Final decision notification: September 22

Camera Ready: November 3 (tentative)

KEYNOTE SPEAKERS
    * Yu Cheng, Chinese University of Hong Kong
    * Noah Goodman, Stanford University

  * Kristen Grauman, University of Texas, Austin

  * Subbarao Kambhampati, Arizona State University

  * Max Tegmark, Massachusetts Institute of Technology

TOPICS

We invite submissions of original and high-quality research papers in the topics related to multimodal algorithmic reasoning. The topics for MAR-NeurIPS 2025 include, but are not limited to:

* Multimodal algorithmic and mathematical reasoning

* Representations of algorithms for neural processing

* Comparisons between AI and human problem solving, including: i) perspectives from psychology and neuroscience, ii) children's cognitive development, and iii) limits of reasoning in large models.

* Extreme generalization to new tasks and few-shot concept induction

* Shortcomings in AI models

* Agentic AI, including multi-agent collaboration and distributed problem solving.

* Scaling laws and efficient algorithms for improving reasoning at test-time

* Foundation models of intelligence, including vision, language, and other modalities

* Physical reasoning and planning using language models

* Multimodal AI applications, including new tasks, datasets, benchmarks, and models for multimodal reasoning

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SUBMISSION INSTRUCTIONS

We are inviting submissions of original and previously unpublished works.

* All submissions are handled via the workshop's CMT website: https://cmt3.research.microsoft.com/MARNIPS2025.

* Submissions should be made in PDF format and must follow the MAR 2025@NeurIPS submission style provided here (except for the NeurIPS checklist, which is optional): https://marworkshop.github.io/neurips25/mar25_neurips_latex_template.zip.

* Submissions should not exceed **4 pages** in length (excluding references).

* Authors may upload an optional Appendix, containing additional details, proofs, videos, images, etc. in a separate zip file (with a max of 50MB in size); the deadline for submitting these supplementary materials is the same as that for the main paper.

* All submissions should maintain author anonymity and should abide by the NeurIPS conference guidelines for double-blind review.

* Accepted papers will be presented as either an oral, spotlight, or poster presentation. At least one author of each accepted submission must present the paper at the workshop **in-person**.

* Presentation of accepted papers at our workshop will follow the same policy as that for accepted papers at the NeurIPS main conference.
* Accepted papers will be made publicly accessible on the workshop website shortly after the camera-ready deadline, but will not have any archival proceedings.
* The submitting authors are expected to also be reviewers for the workshop, if needed.

WORKSHOP ORGANIZERS

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