

# MEGAN TJANDRASUWITA

email: [megantjandrasuwita@gmail.com](mailto:megantjandrasuwita@gmail.com)

website: <https://megantj.github.io/>

## EDUCATION

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- Massachusetts Institute of Technology** 2022 - Present  
Ph.D. in Computer Science  
NSF Graduate Research Fellowship Program (GRFP)
- Massachusetts Institute of Technology** 2022 - 2024  
M.S. in Computer Science, GPA 5.0/5.0  
MIT Presidential Fellowship, NSF Graduate Research Fellowship Program (GRFP)
- California Institute of Technology** 2018 - 2022  
B.S. in Computer Science, GPA: 4.0/4.0

## RESEARCH INTERESTS

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Multimodal machine learning (ML) for behavior analysis, diagnosing and treating health disorders, and understanding memory and cognition. ML methods that combine deep learning with symbolic knowledge to enhance generalization, data efficiency, and interpretability.

## PUBLICATIONS

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(\* denotes equal contribution)

- **Megan Tjandrasuwita**, Jie Xu, Armando Solar-Lezama, Wojciech Matusik. **MeMo: Meaningful, Modular Controllers via Noise Injection.** *NeurIPS 2024*. [[paper](#)]
- Liane Makatura, Michael Foshey, ..., **Megan Tjandrasuwita** (7th author), ... **How Can Large Language Models Help Humans in Design and Manufacturing?** *Harvard Data Science Review 2024*. [[part1](#), [part2](#)]
- Tailin Wu, **Megan Tjandrasuwita**, Zhengxuan Wu, Xuelin Yang, Kevin Liu, Rok Soscic, Jure Leskovec. **ZeroC: A Neuro-Symbolic Model for Zero-shot Concept Recognition and Acquisition at Inference Time.** *NeurIPS 2022, ICML 2022 Beyond Bayes Workshop*. [[paper](#)]
- Jennifer J. Sun\*, **Megan Tjandrasuwita\***, Atharva Sehgal\*, Armando Solar-Lezama, Swarat Chaudhuri, Yisong Yue, Omar Costilla-Reyes. **Neurosymbolic Programming for Science.** *NeurIPS 2022 AI4Science Workshop*. [[paper](#)]
- **Megan Tjandrasuwita**, Jennifer J. Sun, Ann Kennedy, Swarat Chaudhuri, Yisong Yue. **Interpreting Expert Annotation Differences in Animal Behavior.** *CVPR 2021 CV4Animals Workshop*. [[paper](#)]
- Jasmina Arifovic, Anil Donmez, John Ledyard, **Megan Tjandrasuwita**. **Individual Evolutionary Learning and Zero-Intelligence in the Continuous Double Auction.** *Handbook of Experimental Finance, Chapter 19, p.225 – p.250, Edward Elgar publishing*

## RESEARCH EXPERIENCE

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**The Fiete Lab** Apr 2024 - Present  
*Deep Learning Researcher* *Advisor: Professor Ila Fiete*

- Develop ML pipeline for learning image generation in a data-efficient manner by leveraging continuous attractor networks that map encoder output to fixed manifolds.
- Develop a computational model for building and navigating a cognitive map of non-Euclidean spaces, such as family trees and knowledge graphs, based on allocentric representations found in the Entorhinal-Hippocampal memory circuit of the brain.

- Experiments demonstrate that family trees can be stored in episodic memory via one-shot learning and that the model enables reasoning over learned structures.

### **Computer-Aided Programming Group**

Sep 2022 - Present

*Deep Learning Researcher*

*Advisor: Professor Armando Solar-Lezama*

- Researched learning reusable, modular controllers for robots using a novel training objective.
- Developed ML pipeline involving imitation learning for pretraining neural network modules and reinforcement learning for transferring modules to different structures and tasks.
- Experiments in locomotion and grasping domains demonstrate that the learned modules outperform graph neural network and Transformer baselines in training efficiency.
- Full-conference paper published at *NeurIPS 2024*.

### **Stanford Network Analysis Project, Stanford**

Jun 2021 - Jun 2022

*Deep Learning Researcher*

*Advisor: Professor Jure Leskovec*

- Researched neurosymbolic methods for performing human-like concept recognition and reasoning in visual domains.
- Constructed policy architecture of agent that performs unsupervised object discovery and identifies relevant relations between concepts. Integrated recurrence in graph neural network (GNN) architecture to improve agent's long-term reasoning.
- Full-conference paper published at *NeurIPS 2022*. Short paper published at *ICML 2022 Beyond Bayes Workshop*.

### **Machine Learning Group, Caltech**

Sep 2020 - Jun 2022

*Machine Learning Researcher*

*Advisor: Professor Yisong Yue*

- Employed program synthesis to generate human-interpretable programs that classify animal behavior based on laboratory datasets.
- Resulting programs exceeded accuracy of baseline classifiers, and visualizations of temporal filters were more interpretable to neuroscientists.
- First-authored paper published at the *CVPR 2021 CV4Animals Workshop*.

## INDUSTRY EXPERIENCE

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### **Oracle - Corporate Architecture**

Jun 2020 - Sep 2020

*Software Engineer Intern*

- Applied machine learning algorithms to create a recommendation system that processes purchase requests from Oracle's employees.
- Achieved highly interpretable outputs through its ranking system and had a precision of over 80% on validation examples.

## TEACHING EXPERIENCE

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### **Caltech Teaching Assistant**

Jan 2022 - Jun 2022

- Held office hours, graded problem sets, and prepared lecture notes for graduate-level computer science courses: "Machine Learning and Data Mining" (CS/EE 155) and "Advanced Machine Learning Methods" (CS/EE 159).

## HONORS & AWARDS

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NSF Graduate Research Fellowship (GRFP)	2022
MIT Stata Family Presidential Fellowship	2022