

Yuer Tang

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Research Interest

I am interested in how structured representations can enable embodied agents to generalize from limited data. Drawing from cognitive science and neuroscience, I want to formalize principles like compositionality, hierarchy, and symbolic reasoning to build agents that perceive, reason, and act in the physical world without relying on scale alone.

Education

University of California, Los Angeles (UCLA)

Los Angeles, CA

B.S. in Data Theory, Minor in Data Science Engineering

Sep. 2022 – Expected June. 2026

GPA: 3.8/4.0 *Susan Elizabeth Baumgarten Award (2024–2025), Dean's Honors List*

Publications & Presentations

Operator-Theoretic Tools for Conscious and Unconscious Brain Activity

Yuer Tang, Justin Baker

AAAI NeuroAI Workshop (2026)

On the Dynamics of Coherent Memory Structures in Neural Fields

Justin Baker, H. Hardiman-Mostow, Yuer Tang, Andrea Bertozzi

Under Review at ICLR (2026)

When Linear Models Aren't Enough: Forcing as Closure in Chaotic Time Series

Yuer Tang, Justin Baker

Poster, Joint Mathematics Meeting, Washington D.C., Jan. 2026

DODT: Enhanced Online Decision Transformer Learning through Dreamer's Actor-Critic Trajectory Forecasting

E.H. Jiang, Z. Zhang, D. Zhang, A. Lizarraga, C. Xu, Y. Zhang, S. Zhao, Z. Xu, P. Yu, Yuer Tang, D. Kong, Y.N. Wu

arXiv (2024)

Research Experience

Leslie Kaelbling Lab @ MIT

Cambridge, MA

MIT CSAIL Summer Intern, *Advisor: Dr. Jiayuan Mao*

Jun. 2025 – Present

- Built a Beta-VAE generative model to learn scale-structured trajectory primitives, enabling fine-grained control over task execution and automatic adaptation when composing sub-tasks into long-horizon plans. Used VLM to automate scale labeling, removing manual annotation.

Yingnian Wu Lab @ UCLA

Los Angeles, CA

Undergraduate Researcher, *Advisor: Prof. Yingnian Wu*

Mar. 2025 – Aug. 2025

- Investigated how hierarchical representations can support multi-task generalization: using MAML to learn a shared coarse-grained latent structure across tasks, while preserving gradient-based adaptation to task-specific differences within the Latent Plan Transformer framework.

Andrea Bertozzi Lab @ UCLA

Los Angeles, CA

Undergraduate Researcher, *Advisor: Dr. Justin Baker*

Jan. 2025 – Oct. 2025

- Discovered that the HAVOK forcing term captures regime shifts in chaotic systems and proved this arises from Koopman invariance failure under finite truncation, showing that what appears as noise encodes structured information about system state.
- Applied Mori-Zwanzig operator theory to neural dynamics, decomposing what standard models treat as noise into interpretable memory and stochastic forcing terms, showing that learned memory structure differs significantly between awake and anesthetized states in propofol-induced loss of consciousness.

Tao Gao Lab @ UCLA

Los Angeles, CA

Undergraduate Researcher, *Advisor: Prof. Tao Gao*

Mar. 2023 – June 2024

- Applied inverse Bayesian inference to recover agent intentions from observed movements, updating goal posteriors in real time as each action is observed.

Industry Experience

1585 Healthcare

Data Science & Data Engineering Intern

Brooklyn, NYC

Jun. 2024 – Sep. 2024

- Analyzed patient demographics to predict high-risk diabetes populations by region, built automated data pipelines for claims processing, and identified insurance non-compliance patterns to support patient appeals.

Skills

<i>Programming</i>	Python, MATLAB, R, JavaScript, Bash, LaTeX, SQL
<i>Python Packages</i>	PyTorch, JAX, NumPy, scikit-learn, HuggingFace, wandb, pandas, scipy, matplotlib
<i>Robotics</i>	MuJoCo, MetaWorld, IsaacSim, ROS, Git, Docker, Linux
<i>Mathematics</i>	Bayesian Inference, Dynamical Systems, Operator Theory (Koopman, Mori-Zwanzig), Stochastic Processes, Reinforcement Learning, Convex Optimization, Linear Algebra, Signal Processing, Linear Control Theory, Manifold Learning, Graph Theory, Dynamical System
<i>Language</i>	Mandarin Chinese (native), English (fluent)