Tyler Ingebrand

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ABOUT ME

4th year PhD student seeking an internship where I will investigate compositional representation learning for LLMs, or zero-shot reinforcement learning. Eager to collaborate with industry professionals to achieve powerful and timely results. Willing to relocate.

EDUCATION

PhD in Electrical and Computer Engineering In Progress

University of Texas at Austin. Austin, TX, United States

- *Specialization*: Transfer Learning, Reinforcement Learning.
- *Expected Graduation:* 05/2027.
- Advised by Dr. Ufuk Topcu.

INDUSTRY EXPERIENCE

Artificial Intelligence Intern Summer 2023

Multi AI. Austin, TX, United States

- Leveraged modernized versions of classic AI techniques to find approximately optimal solutions to high-dimensional, NP-hard problems.
- Designed novel strategies for fully autonomous, agentic AI to create a personal digital assistant.

RESEARCH EXPERIENCE

Transfer Learning and Zero-Shot Adaptation

- Introduced the *function encoder*, an algorithm for learning basis functions as neural networks, which combines the scalability and expressivity of neural networks with the principles of functional analysis.
- Demonstrated that function encoders achieve state-of-the-art performance at transfer learning tasks, such as regression and classification in low-data settings.
- Leveraged the principles of function encoders to create fully-informative representations for use in downstream tasks such as reinforcement learning.

Applications

- **Reinforcement Learning:** Leveraged the linear representations for downstream multi-task and multi-agent RL to create simple but powerful algorithms.
- **Dynamics Prediction:** Augmented the function encoder with neural ODE basis functions, combining the inductive biases of neural ODEs and the transfer capabilities of function encoders.
- **Operator Learning:** Designed a principled approach to operator learning by learning a set of basis functions for both the source and target function spaces, and then learning a mapping between them. Achieves state-of-the-art performance.
- **Few-shot Image Classification:** Modeled few-shot classification as a Hilbert space, thus enabling superior performance even compared to ad-hoc algorithms.

SELECTED PUBLICATIONS

- Zero-Shot Reinforcement Learning via Function Encoders — ICML 2024
- Zero-Shot Transfer of Neural ODEs — NeurIPS 2024
- Basis-to-Basis Operator Learning using Function Encoders — CMAME 2024
- Fine-Tuning Language Models Using Formal Methods Feedback — MLSys 2024
- Function Encoders: A Principled Approach to Transfer Learning in Hilbert Spaces — ICML 2025