SUNNY Y. DUAN

sunnyd@mit.edu

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY Cambridge, MA

PhD Candidate in Brain and Cognitive Sciences August 2021-Present

- GPA: 4.00/4.00
- Advised by Prof. Ila Fiete
- Nonlinear dynamical systems inference for c-elegans brain modeling.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN Urbana, IL

Bachelor of Science in Computer Engineering August 2013 – May 2016

- GPA: 3.83/4.00
- Honors: Magna Cum Laude; Dean's List (5 semesters)

SELECTED PUBLICATIONS

- **Duan, S.,** Khona, M., Iyer, A., Schaeffer, R. & Fiete, I. R. Uncovering Latent Memories: Assessing Data Leakage and Memorization Patterns in Large Language Models. (2024)
- **Duan, Sunny,** et al. "See and Copy: Generation of complex compositional movements from modular and geometric RNN representations." *NeurIPS Workshop on Symmetry and Geometry in Neural Representations*. PMLR, 2023.
- **Sunny Duan**, Loic Matthey, Andre Saraiva, Nick Watters, Chris Burgess, Alexander Lerchner, & Irina Higgins (2020). Unsupervised Model Selection for Variational Disentangled Representation Learning. In International Conference on Learning Representations
- Garrett Honke, Greg Hajcak, Julia Klawohn, Nina Thigpen, Katie Link, **Sunny Duan**, Pramod Gupta, & Irina Higgins (2021). Representation learning for improved interpretability and classification accuracy of clinical factors from EEG. Submitted to International Conference on Learning Representations
- Tischer, M., Durumeric, Z., Foster, S., **Duan, S.,** Mori, A., Bursztein, E., Bailey, M.: Users really do plug in USB drives they find. In: 2016 IEEE Symposium on Security and Privacy (SP), pp. 306–319. IEEE (2016)

PROFESSIONAL EXPERIENCE

GHOST LOCOMOTION Mountain View, CA

Software Engineer April 2020 – July 2021

- Developed perception models for self-driving cars; work utilized to successfully deliver first autonomous road test

DEEPMIND Mountain View, CA

Research Engineer April 2018 – April 2020

- Implemented reinforcement learning algorithms to optimize power optimization resulting in 10% improvements in power efficiency over previous models
- Led research initiative using learned simulation for analysis and sim-to-real applications leveraging reinforcement learning and VAEs enabling offline evaluation to reduce live experimentation latency from 2 weeks to hours
- Served as tech lead for cross-functional project to leverage reinforcement learning for optimizing YouTube promotions using TD-learning and Monte-Carlo rewards.
- Developed novel method for estimating disentanglement in VAE models with Irina Higgins; method did not require ground truth generative factors and led to publication in ICLR 2020
- Applied disentanglement to simulations of data center cooling and EEG data with Amber Team

GOOGLE Mountain View, CA

Software Engineer III August 2016 – April 2018

- Led engineering initiative that improved networking protocol for initializing ASIC switches
- Implemented cloud management software for controlling networking switches, enabling bootstrapping and cluster bring-up

ADDITIONAL INFORMATION

- **Skills:** Python, Deep Learning, Reinforcement Learning, PyTorch, Jax, Tensorflow, Beam, Apache Hadoop, Apache Spark, C/C++, Matlab/Octave, Linux, Systems, Firmware
- **Relevant Coursework:** Machine Learning (UIUC - CS 446), Artificial Intelligence (UIUC - CS498), Advanced Algorithms (UIUC - CS 473), Data Mining and Analysis (Stanford – STATS202), Theory of Probability (MIT - 18.675), Inference and Information (MIT - 6.437), Mathematical Statistics: A Non-asymptotic approach (MIT - 18.656), Statistical Reinforcement Learning and Decision Making (MIT-9.522)