Daniel (Chee Hian) Tan

Personal site: https://daniel-ch-tan.github.io/
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Research Interests

My general interest is in developing scalable and intelligent control algorithms for embodied agents in the real world (i.e. robots). My aim is to enable robots to accomplish complex tasks in the real world given only high-level instructions. For example, short language commands like "make a bowl of cereal" or "change the lightbulb".

At the moment, I am interested in learning reusable skills for robots that transfer well to downstream tasks. My current focus is on dextrous and agile motor skills for highly articulated robot morphologies. I hope to achieve this by leveraging expert demonstrations, e.g. motion-capture or general internet videos, as well as unsupervised RL methods, e.g. curiosity-based exploration.

Education

SEP 2017 - SEP 2021
Stanford University - *B. Sc. Mathematical and Computational Sciences*

SEP 2022 - PRESENT
University College London - *M. Phil/PhD. Computer Science*

Research Posts

JUL 2021 - AUG 2022
Agency of Science, Technology, and Research, Singapore - *Research Engineer*

- Supervised by Michael Meng Yee Chuah and Yau Wei Yun at Institute of Infocomm Research, Robotics and Autonomous Systems department
- Implemented reinforcement learning methods to train legged locomotion controllers
- Deployed said controllers to hardware and collected real-world data to improve system

Publications

Daniel Chee Hian Tan*, Jenny Zhang*, Michael (Meng Yee) Chuah and Zhibin Li. **Perceptive Locomotion with Controllable Pace and Natural Gait Transitions Over Uneven Terrains.** arXiv preprint https://arxiv.org/abs/2301.10894

Esin Darici Haritaoglu, Nicholas Rasmussen, Daniel C. H. Tan, Jennifer Ranjani J., Jaclyn Xiao, Gunvant Chaudhari, Akanksha Rajput, Praveen Govindan, Christian Canham, Wei Chen, Minami Yamaura, Laura Gomezjurado, Aaron Broukhim, Amil Khanzada, Mert

Pilanci **Using Deep Learning with Large Aggregated Datasets for COVID-19 Classification from Cough.** arXiv preprint https://arxiv.org/abs/2201.01669

Industry Experience

AUG 2022 - OCT 2022

Virufy - *MLOps Tech Lead*

- Supervised by Amil Khanzada, CEO. Volunteering on-and-off since Apr 2021
- Designed, developed, and maintained data processing pipelines to aggregate offline and streaming data into a single unified format and data store
- Developed pipeline to deploy trained model checkpoints as microservices to be used by the frontend application

JUN 2019 - DEC 2019

GovTech, Singapore - *Software Engineering Intern*

- Supervised by Leehong Lau, Tech Lead of Embedded Systems team.
- Developed a computer vision pipeline for crowd-counting to deploy on edge devices
- Experimented with multiple methods of compressing large vision models without losing performance

JUN 2019 - SEP 2019

TripAdvisor, Boston - *Software Engineering Intern*

- Implemented a ranking algorithm based on word features to maximize diversity of top results
- Developed a machine learning model to rank hotel listings based on predicted click-through rate

Open-Source Contributions

- **Mujoco-MPC:** https://github.com/deepmind/mujoco_mpc/pull/51
- **CleanRL**: https://github.com/vwxyzjn/cleanrl/pull/320
- **MBRL-Lib**: https://github.com/facebookresearch/mbrl-lib/pull/135
- **IsaacGymEnvs:** https://github.com/NVIDIA-Omniverse/IsaacGymEnvs/pull/111

Teaching

University College London

- COMP0188 Deep Representations and Learning, Autumn 2022
- COMP0233 Research Software Engineering in Python, Autumn 2022