Zhongxia "Zee" Yan

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Education

Massachusetts Institute of Technology
Ph.D. in Computer Science, minor in Robotics — GPA: **5.0/5.0** — Expected Jun 2024

University of California, Berkeley
M.S. in Electrical Engineering and Computer Science — GPA: **3.92/4.0** — May 2018
B.S. in Electrical Engineering and Computer Science — GPA: **4.0/4.0** — May 2017

Selected Research (5 first-author publications + 3 under review)

PhD Candidate – MIT, advised by Cathy Wu — Sep 2019 – Present

- ∴ Focus: multi-vehicle scheduling and path planning problems in **transportation**, **operations research**, and **robotics**
- ∴ Integrated **deep learning** and **reinforcement learning (Python, PyTorch)** to improve solution qualities and computation times of **search** and **optimization (C++)**, especially in large-scale problems

Yan, Z, Kreidieh, A R, Vinitsky, E, Bayen, A M, Wu, C. Unified Automatic Control of Vehicular Systems with Reinforcement Learning. ***IEEE TASE, IROS* 2022**. mit-wu-lab.github.io/automatic_vehicular_control

Li, S*, **Yan, Z***, Wu, C. Learning to Delegate for Large-scale Vehicle Routing. ***NeurIPS* 2021 (Spotlight, top 3%)**. mit-wu-lab.github.io/learning-to-delegate

Research Assistant – MIT, advised by Phillip Isola — Feb 2019 – Sep 2019

- ∴ Trained **transformers** for **language modeling** with long range memory and contrastive learning
- ∴ Compressed transformer-based language model by 60x with distillation, pruning, and quantization

Yan, Z, Wang, H, Guo, D, Song, H. MicroNet for Efficient Language Modeling. ***NeurIPS* 2020 MicroNet Competition 1st place.** micronet.mit.edu

Selected Internships (6 total: 2 research + 4 engineering)

Research Scientist Intern – DeepMind (Google) — May 2022 – Aug 2022

- ∴ Designed and deployed an **AlphaZero**-based method for optimizing the construction of sorting networks
- ∴ Improve the performance and scalability of **learning-guided Monte Carlo Tree Search (Python/C++)** by 8x

Applied Scientist Intern – Amazon Robotics — June 2021 – Sep 2021

- ∴ Designed and implemented a **multi-agent reinforcement learning** algorithm to optimize movement of hundreds of agents on a **Java** simulated Amazon warehouse floor
- ∴ Built significant **AWS** infrastructure for job submission, parallel training, and interactive visualization
- ∴ Demonstrated significant improvement in system throughput over heuristically designed baselines

Software Engineering Intern – Google Android Auto — May 2017 – Aug 2017

- ∴ Created prototypes with architectural changes for the **Android** Auto product, involving both application-level (e.g. threading / synchronization, binders, lifecycles, JNI) and platform-level (e.g. processes, package installation)
- ∴ Involved in US Patent 1,009,7684 for new user feature termed "Passenger Mode"

Other engineering internships: Bloomberg 2018, Veeva Systems 2016, Broadcom 2015

Other Experience

TA: 6.883 Meta-Learning, 6.246 Reinforcement Learning, 6.867 Machine Learning, CS176 Algs for Comp Bio

- ∴ 2020 Frederick C. Hennie III Teaching Award, MIT EECS

2020 David Dwight Eisenhower Transportation Fellowship Program (DDETFP) Fellow

2014 USA Biology Olympiad Bronze Medalist **(top 12 in USA)**

Expert skills: **Python**, **PyTorch**, **Numpy**, **Pandas**, Matplotlib, **C++**, Pybind11, **Java**, **Git**, **Linux**, Slurm
Proficient skills: AWS, Tensorflow, Jax, SQL, Javascript, React, Node.js, MongoDB, HTML, CSS, Gurobi, Android

Other projects: AlphaZero-Gomoku (Python, multiprocessing), video prediction (CNN+LSTM), 3D reconstruction (OpenSFM), apartment rental website (React, Node.js), Berkeley solar vehicle dashboard (C++ firmware, circuit design), household finance website (PHP, LAMP), Super Gitlet (Java, allows merge, rebase, remote), Project Euler (up to level 143)