

Mingxiang Fan

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Experience

Senior Software Engineer, Waymo Dec 2019 – present
Behavior Team — Planner Core

- **Vehicle dynamics** (since 05/2024). Worked on highly complicated trajectory infrastructure, enabling Waymo to solve low-likelihood ([XX] IPMM) driving issues and continue to scale. Improved planner ML model behavior in weather (rain / snow). Built skills and agents to improve team productivity and automatically triage highly complicated issues.
- **Router** (05/2023 – 03/2024). Designed, implemented, and optimized the next generation routing software for Waymo, reducing in-vehicle memory usage by [XX]% and serving [X]k QPS from the TaaS servers, which enabled the company to scale on a larger service area.
- **Trajectory optimization** (12/2019 – 05/2024). Built an ML-based trajectory optimization system, grew the team from 3 people to 20+.

Founder, PongSensei (side project) May 2024 – present
www.pongsensei.com — an evolving table tennis coaching experience powered by artificial intelligence, currently under development.

- Built a bespoke model with UNet and transformer architecture using TensorFlow and Keras, trained on hundreds of hours of video data, with multi-modal heads for gameplay understanding.
- Custom-built labelling, visualization, and debugging tools to hill-climb on model performance.
- Shipped and available on web, Android, and iOS.

Software Engineer II, Google, Cloud July 2018 – Dec 2019
GSuite Data Location, Gmail Backend

Robotics Engineer Intern, Mechmind Robotics May 2017 – Aug 2017
Mechviz — a client software for controlling industrial robots.

Education

University of Michigan, MSc in Robotics – Ann Arbor, MI, USA Sept 2016 – May 2018

- Selected courses: Robot Kinematics, Machine Learning, Computer Vision, Introduction to Entrepreneurship
- Research Assistant at Jessie Yang's lab

Tsinghua University, BE in Electronics Engineering – Beijing, China Sept 2011 – July 2015

- Vice President of EESAST (EE Student Association of Science and Technology)

Skills

Programming Languages: C++ (primary), Python, JavaScript, Go, TypeScript

Tools & Platforms: Linux, TensorFlow, Keras, CUDA, OpenCV, ROS, Embedded Systems, 3D Printing

Domain Knowledge: Machine Learning, Reinforcement Learning, Motion Planning, Computer Vision

Patents

- Centralized Coordinated Control of Multiple Autonomous Vehicles Within a Restricted Region — Patent Pending, Waymo LLC
- US 12612079 B2 — Collision Evaluation Using a Hierarchy of Grids, Waymo LLC
- CN 109834706 A — A Method and Equipment to Avoid Kinematic Singularity Points in Robot Motion Planning, Mechmind Robotics

Awards

- 2022 Waymo Engineering Excellence Award
- 2021 Jiangmen Venture Capital Super A Youth Talents Award