Bowen Fang

bf2504@columbia.edu |Tel: 9172933109 | Personal Website: www.github.com/bwfbowen |
Google Scholar: scholar.google.com/citations?user=bEebg80AAAAJ |LinkedIn: www.linkedin.com/in/bowenfang/ |

EDUCATION

Ph.D. Student, School of Engineering and Applied Science, **Columbia University**, New York, NY   2024-present
- Focus: Reinforcement Learning and Autonomous Driving
- GPA: 4.1
- Advisor: Sharon Di
- Relevant courses: Diffusion Models AI & RL, Quantum Computing and Communication

M.S. in Operations Research, **Columbia University**, New York, NY   Feb 2024
- GPA: 4.13
- Relevant courses: Advanced Big Data and AI, ML and High-dimensional Analysis, Robot Learning, Optimization, Stochastic Models

B.Mgt in Big Data Management and Application, **Peking University**, Beijing China   Sep 2018 - Jul 2022
- GPA: 3.5
- Relevant courses: Algorithms and Data Structure, Database

PUBLICATIONS AND PREPRINTS

Efficient Consistency Model Training for Policy Distillation in Reinforcement Learning
Bowen Fang, Xuan Di *ICLR 2025 Workshop on Deep Generative Model in Machine Learning: Theory, Principle and Efficacy*
[Paper]

SLAMuZero: Plan and learn to Map for Joint SLAM and Navigation
Bowen Fang, Xu Chen, Zhengkun Pan, Xuan Di *Proceedings of the International Conference on Automated Planning and Scheduling, ICAPS 2024*
[Paper], [Code]

Learn to Tour: Operator Design for Solution Feasibility Mapping in Pickup-and-delivery Traveling Salesman Problem
Bowen Fang, Xu Chen, and Xuan Di *(submitted to Transportation Research Part B, under review) 2024*
[arxiv]

TraveLLM: Could you plan my new public transit route in face of a network disruption
Bowen Fang, Yang Zixiao, Wang Shukai, and Xuan Di *2024*
[arxiv]

INDUSTRY EXPERIENCE

Applied Scientist, AWS, New York, NY   May 2025 – Aug 2025
- Training efficiency and stability of LLM

Part-time Data Scientist, **MathWorks**, New York, NY   Aug 2022 - Dec 2022
- Reproduced **Dynamic Programming** for Goal-based Wealth Management, developed 4 reward signals, devised experiments with 6 model-free agents to discover the best algorithm
- Achieved an increase of success rate from 41% to 61%, compared to **Q-Learning** baseline, the success rate is -0.07 from theoretical best probability. A blog with code was published officially and **added into MATLAB toolbox**
  [blog]

Machine Learning Research Engineer Intern, **AI TOPIA**, Beijing, China   Sep 2021 - Jun 2022
- Proposed learning algorithms to optimize execution cost for intraday order placement optimization. Implemented 5 **model-free algorithms** and a high frequency trading environment
- Utilized advanced models including **DeepLOB** and XGBoost to improve the short-term prediction. Realized on average 2-ticks better price for tick-level order placement

Quant Analyst Intern, **Nomura Orient International Securities**, Shanghai, China   Jul 2021 - Sep 2021
- Perfected our **FOF website platform**. Built **dashboard and SQL database** for metrics include style and systematic risk
- Realized a new feature in **MongoDB** and a **web crawler**, which has been **added to the department's core codebase**

Data Scientist, Intern, **Deloitte**, Beijing, China   Aug 2020 - Oct 2020
- Completed a **web crawler** project and automatically produced formatted excel spreadsheet weekly
- Collaborated with data scientists on the **interactive data visualization**, preprocessed fundamental data for **business intelligence dashboard** products

PROJECT EXPERIENCE

SINA: Seamless, Intelligent Navigation Anywhere   NY, United States
- Winner of CS3 VALIDATE Accelerator program, received initial funding and continued funding.

Python Open-source Library Muax[code]   NY, United States
- Implemented variants of **MuZero** with **JAX/TensorFlow**, supported **distributed RL** and **distributed training**
- Integrated with DeepMind's **Acme** framework, compared **MCTS** search policies on **Open Spiel** multi-agent games (e.g., Go)

SLAMuZero[code]   NY, United States
- Enhanced **MuZero** perception with **SLAM** for **embodied AI**, experiment on Meta's **Habitat simulator**
- Realized comparable performance for indoor **exploration** tasks on Gibson dataset, with better sample efficiency

LLM Agent Navigation in VR Unity   NY, United States

PRESENTATIONS

- Learn to Tour: Operator Design for Solution Feasibility Mapping, INFORMS, Phoenix, United States, 2023
- SLAMuZero: Plan and learn to Map for Joint SLAM and Navigation, ICAPS, Banff, Canada, 2024

HONORS AND AWARDS

Calatrava Family Fellowship   2024

PROFESSIONAL SERVICE

Reviewer
- Transportation Research Board
- Transportation Research Part C: Emerging Technologies

Workshop Organization
- Student Assistant, Urban Mobility AI Workshop, Columbia University, 2024
  - Developed and maintained workshop website with **HTML/CSS/JS**, Assisted in organization and coordination
  - Workshop URL: [Homepage]

TEACHING EXPERIENCE

Teaching Assistant, IEOR department**, Columbia University**, New York, NY   2023
- Graduate Optimization Models and Methods (IEOR E4004) instructed by Cedric Josz
- Self-motivated to enhance final project on **Moving Object Detection**, created sample videos and code templates for quick start[summary]

TECHNICAL SKILLS

- Programming: Python, SQL, C++, C#, Java, MATLAB
- Development: HTML/CSS, JavaScript, Unity, XCode
- Machine Learning: JAX, PyTorch, TensorFlow, MuZero, Acme, OpenCV, LLM
- Data Science: Apache Spark, Docker, Airflow, MongoDB, Pandas, NumPy, SciPy
- Cloud Computing: AWS, GCP

- Others: Git, LaTeX, Linux, iOS