Bingqing (Selina) Wan

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Summary

- Master student in robotics with expertise in deep learning, perception, and motion planning; design, develop, and evaluate learning-based perception, mapping, and control systems using Python, C++, and ROS 1&2 on Linux.
- Publication record at ICRA 2025, CoRL 2025 Workshop on Generalist Policies in the Wild, NeurIPS 2025 Workshop on SpaVLE.

Work Experience

Machine Learning Engineer Intern – Data & ML Platforms **May 2023 – Aug 2023**
Universal Studios | Strategic and Data Service Team Beijing, China
- Automated feature engineering and data-quality checks over 20M+ rows (Python, SQL) with efficient Data Structures and vectorized Algorithms, which reduced pipeline runtime by ~25%.
- Served forecasting endpoints (Prophet/ARIMA) utilized by operations, boosting forecast accuracy by 12% and cutting staffing wait times by 15%; services deployed on Linux/Unix with CI/CD.
- Versioned ML APIs with Git/GitHub Actions which accelerated deploy cycles by 20%, and integrated telemetry to ensure the reliability of the Distributed Systems.reliability.

Software Engineer Intern – ADAS Mapping Tools **Sep 2021 – Dec 2021**
General Motors | ADAS Map Data Tools Core Team Markham, ON, Canada
- Implemented C# services and JavaScript/Node.js visualization for Super Cruise HD maps, utilizing optimal data structure for background loading & caching that improved map load time by 18%.
- Developed reusable exception-handling middleware cut QA unhandled errors 70%
- Added unit tests to improve maintainability.

Software Engineering for AI Research Intern **Jan 2021 – Sep 2021**
Huawei Technologies Canada Co., Ltd Markham, ON, Canada
- Designed a data-driven research platform to systematically analyze the feature adoption of major open-source ML frameworks (PyTorch, TensorFlow, scikit-learn), guide Huawei's AI product team with strategic software investment.
- Engineered an automated, scalable data acquisition pipeline using MySQL and internal APIs to curate and maintain a comprehensive dataset of 30,000+ academic GitHub repositories and their associated data (e.g., Papers With Code).
- Designed and implemented monitoring hooks and logging/telemetry within the analysis platform to proactively track data ingestion and processing failures, improving system reliability and guaranteeing 99.5% data processing uptime.

Selected Research Project

VLM Agentic Quadruped Mobile Manipulation @ UPenn GRASP Lab **May 2025 – Present**
Supervised by Prof. Dinesh Jayaraman & Prof. Pratik Chaudhari Philadelphia, PA, USA
- Built a VLM agentic system that composes a diverse robotic tool repertoire into programmatic policies via a closed-loop interface.
- Engineered the framework with VLA models as callable tools, allowing the VLM agent to dynamically leverage their learned skills.
- Developed a multisensory perception stack integrating YOLOE-11L with RealSense RGB-D, FasterLIO odometry and mapping with Hesai XT-16 LiDAR, cuRobo motion planning, semantic object tracker and onboard state feedback.
- Deployed the system on two real-world robots (Franka Emika, Unitree Go2W with AgileX PiPER), achieving zero-shot success on complex tasks like folding towel and long-horizon object retrieval; enabled its application in autonomous data collection.

F1/10th Racing Car @ UPenn **Jan 2025 – May 2025**
Supervised by Prof. Rahul Mangharam Philadelphia, PA, USA
- Integrated Sick LiDAR on Jetson Orin with ROS 2, delivering 70 Hz synchronized streams (30 → 70 Hz).
- Developed a hybrid MPPI–RL control architecture, where an upper-layer Soft Actor-Critic (SAC) policy learns aggressive cornering strategies over a 15-dimensional state space (tire slip ratio, sideslip angle, etc.), while the MPPI layer (programmed in JAX) enforces safety constraints—improving lap times by 35 % with real-time obstacle-avoidance cycles.
- Closed the sim2real gap in an outdoor race track with denoised LiDAR scans, tuned control gains, and off-loaded rollouts to the GPU—achieving a 3× planning speed-up, and reducing trajectory drift ≈ 20 %.

Education

University of Pennsylvania **Aug 2024 – Present**
M.S.E. in Robotics **(Exp. Grad: Jun 2026)**
GRASP Laboratory (Supervised by Prof. Dinesh Jayaraman & Prof. Pratik Chaudhari) Philadelphia, PA, USA
Courses taken: Principles of Deep Learning, Computer Vision, Learning in Robotics, Physical Intelligence, Generative AI
Teaching (Course TA): Computer Vision Fall 2025

University of Toronto, St. George Campus **Aug 2018 – Jun 2024**
B.A.Sc. in Engineering Science Toronto, ON, Canada
Robotics major, Machine Intelligence minor
Awards: Dean's List (2020, 2023), Dean's Merit Award (2018)
Courses taken: Computer Vision, Control Theory, Machine Learning, NLP, Learning from Data, Database, Software Design

Technical Skills

Languages: Python, C++, Java, JavaScript, C#, SQL, Bash, MATLAB
Systems & Platforms: Linux/Unix, Docker, Git, GitHub Actions (CI/CD), ROS2, FastAPI/REST, AWS (EC2/SageMaker), SQL