XUGE GUO

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EDUCATION

Columbia University New York, NY
Master of Science in Mechanical Engineering Dec 2026

Wuhan University of Science and Technology Wuhan, China
Bachelor of Engineering in Traffic Engineering Jun 2024

INTERNSHIP EXPERIENCE

Scania Manufacturing (China) Co., Ltd Rugao, China
Digital Coordinator, Chassis Assembly Department Jan 2024 - Mar 2024

- Executed a questionnaire survey of safety inspectors in workshop and performed data filtering and analysis after obtaining survey data
- Utilized Power BI to visualize problematic situations, achieving factory data visualization management
- Created a mini-program with Pandas library and Anaconda to analyze spreadsheets and extract key data, was then visualized using Power BI and presented on company website

WORK EXPERIENCE

Study in an Autonomous Navigation Robotic Summer Program Nanchong, China
Supervisor: Jundao Pan, Chinese Academy of Sciences Jun 2024 - Sep 2024

- Developed speed-control system for a double-wheel differential robot using an encoder and a PID algorithm
- Wrote code to control robot to accelerate and decelerate and turn to different angles in Python language and Arduino embedded platform

PROJECTS

Two-Wheel Target-Tracking Robot with Support Wheel Nov 2025 - Nov 2025
Leader, MakeCU Hackathon (24-hour project) - Best Use of CV

- Designed and led development of a Raspberry Pi–based two-wheel robot capable of autonomous target tracking and obstacle avoidance within a 24-hour hackathon.
- Implemented computer vision to detect target position in real time and control wheel motion accordingly, enabling smooth left/right steering.
- Integrated ultrasonic sensing to measure forward distance and trigger automatic braking when obstacles are within 50 cm.
- Built a full system including camera processing, IMU stabilization logic, motor control, and sensor fusion, demonstrating strong hardware–software integration and real-time decision-making.

Quadruped Robotics Project Sep 2025 - Dec 2025
Solo

- Designed a complete quadruped robot in SolidWorks, including full mechanical modeling and structural refinement.
- Built and wired a full electronic system, integrating Raspberry Pi, servo drivers, sensors, and power distribution.
- Programmed servo control pipelines on Raspberry Pi to achieve stable gait locomotion at 40 cm/s.
- Developed and tested reinforcement learning in MuJoCo simulation, calibrating physical parameters to match real-world behavior.

Intersection Optimization Design Near University and Subway Station Jun 2023 - Jul 2023
Co-leader in a team of 7

- Executed surveys at designated intersections to collect data including signal phases, number of lanes, traffic flow, and lane widths
- Enhanced intersection's capacity and safety by anticipating traffic demands based on collected data and implemented channelization design
- Modified traffic signal timings to revamp pedestrian crossing efficiency and reduce stop delays for vehicles approaching from other roads
- Added green belts to underused bicycle lanes alongside north-south lanes of intersection to improve lane utilization and safety for cyclists

SKILLS

- Python, Java, SOLIDWORKS, Computer Vision, Sensor Fusion, Robotics, MuJoCo