Darren Dong

Queens, NY 11357 • (929) 300 - 1012 • ddarren@umich.edu
https://www.linkedin.com/in/darren-dong-108841210/ • https://github.com/DarrenDong0426

EDUCATION

University of Michigan, Ann Arbor, MI

M.S.E in Computer Science and Engineering **Expected: May 2027**

B.S.E in Computer Science with Minor in Electrical Engineering, GPA: 3.848/4.0 **Expected: May 2026**

Relevant Courses: Embedded Systems, Sensors and Signals, Advanced Operating Systems, Computer Security, How to Make Robots, Artificial Intelligence, Computer Vision

EXPERIENCES

IT Automation Prompt Engineering Intern | *Keurig Dr Pepper, Frisco, TX* **June 2025 - August 2025**

- Piloting automated shelf image analysis with GenAI and computer vision to identify product voids and potential revenue loss; current testing focuses on optimizing image resolution and model accuracy.
- Designing and building an operator-support chatbot for the Allentown plant; early pilot aims for a 20% reduction in troubleshooting downtime and $300K in annual revenue growth based on projected OEE improvements.
- Collaborating with Google, Microsoft, and internal teams to evaluate open-source and multimodal AI tools, adapting strategies based on early user feedback and technical constraints.

EECS 442 Computer Vision Instructional Assistant | *University of Michigan, Ann Arbor, MI* **January 2025 - Present**

- Developed homework assignments on neural networks and contrastive learning for a computer vision course (100+ students), enhancing both conceptual and practical skills.
- Held weekly office hours and provided prompt support on Piazza to reinforce lecture content and address student questions.
- Maintained the course website by updating links and resources, ensuring reliable access to current information.

Research Assistant | *University of Michigan, Ann Arbor, MI* **May 2023 - August 2023**

- Built an affordable, sustainable greenhouse ventilation system (under $100) using durable, weather-resistant components; ensured easy assembly and public accessibility and achieved sub-2-second responsiveness to temperature changes and push-button interactions, with full shutter motion completed within 10 seconds of receiving a signal.
- Maintained regular communication with the supervising professor to planned future phases, including wireless networking integration with ESP32.

PROJECTS

Soft Robotic Sensor with Embedded Light Control **April 2024**

- Designed and built a lightweight, cost-effective soft robotic light sensor (~$30) using materials with high light transmission and an electrical system (LED, tubing, photodiode, low-pass filter) for accurate signal detection.
- Programmed a Raspberry Pi Pico to control motor speed based on detected light, implementing PID control for responsive, sensor-activated operation.

Virtual Memory Pager **March 2025**

- Designed and implemented a C++ virtual memory pager supporting address space management, including swap/file-backed pages, copy-on-write, and dynamic swap sharing for parent and child processes. Managed page state and permissions with read/write, dirty, and referenced bits; optimized memory eviction using the clock replacement algorithm.
- Enabled core operations such as mapping, context switching, and forking, demonstrating a deep understanding of process isolation and OS-level resource management.

SLAM and Navigation of a Two-Wheeled Robot **January 2024 - April 2024**

- Programmed a two-wheeled robot to autonomously explore unknown mazes using particle filter-based SLAM and LIDAR localization, achieving pose accuracy within 10 cm and 30°.
- Deployed A* path planning and real-time obstacle avoidance, enabling efficient and safe traversal of dynamic environments.
- Enhanced odometry precision by tuning motor controls with PID algorithms, minimizing movement error.
- Built real-time map and localization visualizations in RViz to monitor robot performance and identify unexplored regions.

Hovercraft Prototype **February 2023 - April 2023**

- Developed and presented hovercraft design concepts to ensure successful flight and 50g payload capacity, selecting optimal materials and addressing constraints of two running motors.
- Built, simulated, and tested the prototype using cardboard and CATIA to analyze airflow; achieved a 797g mass (within 800g budget), 15W power output, and 8N lift, enabling hovercraft to complete navigation challenges, achieving a straight line in 50 seconds and a figure-eight in 6 seconds during time trials.

SKILLS

Programming Languages: C, C++, Python, Shell Scripting

Embedded & Hardware Tools: Embedded Systems, Arduino, Raspberry Pi, STM32, SPI/I2C

Frameworks & Libraries: Platforms & Tools: Linux, Windows, macOS, Docker, Git, GitHub, OpenCV, PyTorch, Flask