Darren Dong

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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: Data Structure and Algorithms, Computer Vision, Artificial Intelligence, Machine Learning, Web Systems, Practical Data Science, Advanced Operating System, Natural Language Processing, Computer Security, Embedded Systems

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EXPERIENCES

University of Michigan, Ann Arbor, MI | *EECS 442 Computer Vision Instructional Assistant* **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.

Keurig Dr Pepper, Frisco, TX | *IT Automation Prompt Engineering Intern* **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.
- Delivering interim findings and technical demos to business leaders to inform future direction of AI adoption in manufacturing and retail operations.

Michigan Drone Technology, Ann Arbor, MI | *AI Subteam Lead* **August 2023 - May 2024**
- Led the AI subteam, achieving near-perfect attendance in both in-person and virtual meetings with other subteams. Delivered clear presentations on AI subteam goals and updates, fostering effective communication and driving progress toward drone enhancement.
- Collaborated closely with subteam members to select hardware components and software frameworks for the drone, carefully weighing factors such as cost, weight, and complexity. Established a strategic roadmap for future growth, aligning with the club's vision for developing an autonomous drone.
- Developed an initial neural network framework, setting the stage for clean, scalable code development by the team. Configured a Raspberry Pi 4 microcontroller to support this work, including enabling campus WiFi access and installing essential tools like Visual Studio Code and PyTorch.

PROJECTS

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.

Object Detection and Classifications **March 2024 - April 2024**
- Implemented the YOLOv8 model for efficient multi-object detection, focusing on five fruit classes using a Kaggle dataset. Achieved bounding box detection and confidence levels up to ~90%.
- Developed and trained a custom 2-layer neural network model for offline object classification of various clothing types from the FashionMNIST dataset, achieving over 85% training and validation accuracy with minimal training.
- Conducted a research-driven analysis to implement a fusion model based on EmotionNet and Central Binary Local Pattern (CBLP) algorithm. Achieved 50% accuracy with EmotionNet and 33% with the CBLP algorithm for emotion recognition.

SKILLS

Programming Languages: C++, Java, Python, JavaScript, SQL, C, HTML, CSS, Dart, Shell Scripting

Frameworks & Libraries: Git, GitHub, PyTorch, NumPy, Matplotlib, OpenCV, Pandas, Flask (REST API), React (SPA Development), Flutter, Jinja2