Xuanyou Chen

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Education

Georgia Institute of Technology — Atlanta, GA
Bachelor of Science in Computer Engineering — Expected May 2028
Dual Degree Engineering Program

Emory University — Atlanta, GA
Bachelor of Science in Computer Science and Mathematics — May 2025
Cumulative GPA: **4.0/4.0**

Experience

Intelligent Vision & Automation Laboratory (IVALab) | Student Research Assistant — Aug 2025 – Present

- Worked under the guidance of Dr. Patricio Vela to build a full Python package for the **MyCobot280** Arm, including functions for kinematics, gripper control, trajectory recording, and coordinate frame management (3 modules, 50+ functions).
- Collaborated on ArUco-based camera calibration and implemented "click-to-capture" vision-guided picking pipeline.
- Customized the full hardware stack for a suction gripper, including a MOSFET-based pump/valve switching circuit, GPIO interfaces, and 3D-printed mechanical adapter for mounting onto the arm.
- Diagnosed and repaired two malfunctioning electric grippers—opened and serviced the hardware, coordinated with vendor technical support, and successfully secured two replacement servos at no cost.

RoboNav, RoboJackets | Software Team Member — Sep 2025 - Dec 2025

- Implemented a ROS2/C++ autonomy stack for a simulated mobile robot, covering perception, SLAM, and navigation in Gazebo.
- Built modules for HSV-based obstacle detection, occupancy-grid mapping, particle-filter localization, Kalman-filter tracking, and A* global planning, integrating them with Nav2.
- Simulated system behavior and enabled goal-directed navigation in GazeBo and RViz.

Emory Center for AI Learning | Project Leader — Jan 2025 - May 2025

- Led the development of a medical chatbot in collaboration with MedView to answer device-related questions.
- Coordinated development efforts, guiding integration between frontend, backend, and database components.
- Developed a React + TypeScript frontend supporting both text and voice interaction using the Web Speech API.
- Built a FastAPI backend to query the DeepSeek API, with semantic caching using Sentence Transformers and FAISS for low-latency FAQ retrieval from a predefined MongoDB database.

Curastone | Software Developer Intern — Sep 2023 - Dec 2023

- Developed an AI learning assistant generating flashcards and personalized exercises using TypeScript and Next.js.
- Implemented user authentication, file upload, and course management, integrated with backend API using Redux.
- Designed responsive webpages using Tailwind CSS to ensure proper display of elements on various screen sizes.
- Deployed website using Vercel and AWS Route 53 and documented the deployment process for future reference.

Projects

End-to-End Robot Learning via Teleoperation | Project Walkthrough — Fall 2025
Tools: Python, PyTorch, SO-101 Arm

- Built a dual-arm teleoperation setup using two 6-DOF SO-101 robotic arms, where a leader arm streams joint angles to a follower arm in real time for data collection and manipulation tasks.
- Developed a data pipeline that records synchronized camera images and 6-DOF joint positions, collecting 50 demonstrations (9.6k samples) for end-to-end imitation learning.
- Trained both a ResNet-18 to predict SO-101 joint motions directly from images. Analyzed model behaviors and identified key failure modes (shadow sensitivity, limited grasp examples, camera-viewpoint issues).

RRT-Based Drone Racing Planner — Fall 2025
Tools: Python, GTSAM, Plotly

- Implemented a full 3D RRT planner in SE(3), including random pose sampling and nearest-pose search, and steering functions for drone navigation through race-course hoops.
- Extended the planner with several steering strategies (vector-based, terminal-velocity inspired, rotation-limited) to improve the feasibility of motion.
- Built a multi-stage RRT pipeline to sequentially navigate through race-course hoops, including backtracking, pose correction, and 3D visualization of the resulting paths.

Skills

Robotics & Simulation: ROS, GazeBo, MuJoCo, MoveIt, PyTorch, Scikit-Learn, Stable-Baselines3 (SB3), OpenCV
Programming Languages: Python, Java, C, C++, SQL, JavaScript
Systems & Tools: Linux, Git, VMware, Amazon Web Services, Google Cloud Platform