

Ian Kwan

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Education

Georgia Institute of Technology | GPA: 3.95/4.0 (Senior Standing) **Atlanta, GA | Aug. 2021 – May 2025 (Expected)**
B.S. in Mechanical Engineering | Concentration in Automation and Robotic Systems

Relevant Coursework: Dynamics, Mechanics of Materials, Circuits & Electronics, Thermodynamics, Computational Data Analysis, System Dynamics, Fluid Mechanics, Computational Problem Solving, Heat Transfer, Machine Design, Mechatronics

Skills

Manufacturing: Mill, Lathe, Soldering, FDM 3D Printing, Laser Cutting, Waterjet Cutting, Design for Manufacturing, GD&T

Software & Programming: Solidworks, Autodesk Inventor, Fusion 360, Arduino | Python, MATLAB, Java, C, C++, LabVIEW

Languages: English (fluent), Mandarin Chinese (fluent)

Other: Finite Element Analysis, Scanning Electron Microscopy, Mechatronics, Machine Learning, Research

Experience

BattleBots @ RoboJackets | Research Division Lead **Atlanta, GA | May 2023 – Present**

- Macro-managing the Research Division of Georgia Tech's combat robotics student organization
- Submitted requests for each project's bill of materials to the project manager to enable each team to meet deadlines
- Emphasized documentation practices for all projects to speed up the onboarding process for newer members

Water-Energy Research Lab | Undergraduate Researcher **Atlanta, GA | Jan. 2023 – Present**

- Experimentally infused microscopic silica shells with different salt hydrate compounds for characterization with Scanning Electron Microscopy and their compositions with Energy-Dispersive X-Ray Spectroscopy
- Designed and fabricated an HDPE machine press to extract corrosive liquid from hemp specimens, with maximum applied load threshold beyond 150 lbs for a requirement of 50 lbs

Georgia Tech Research Institute | Research Engineer Intern **Atlanta, GA | May 2023 – July 2023**

Associated Citation: *De, A., Kumar, D., Kwan, I., Qiu, A. and Hu, A.-P., Compliant Robotic Gripper with Integrated Ripeness Sensing for Blackberry Harvesting. Accepted to 2024 IEEE International Conference on Robotics and Automation (ICRA).*

- Designed a mechanical compliant gripper end-effector using Solidworks and developed the harvesting sequence for a robotic blackberry harvester, which achieved a 62.5% pick rate and 0% damage rate experimentally
- Developed Principle Component Analysis-based method of determining orientations of berries in space with computer vision using OpenCV and YOLOv5 in Python to allow the gripper to perform optimal grips
- Designed 3D-printed fixtures for testing infrared LEDs for an integrated ripeness probe

Projects

Tsunami - BattleBots @ RoboJackets **Atlanta, GA | May 2023 – Present**

- Conceived and evaluated design choices for Tsunami's chassis, and presented in design reviews for iterative feedback
- Manufactured 6061 aluminum plates and pulleys for Tsunami's chassis using mill, lathe, and waterjet cutting
- Mentored teammates in using machining tools within the Student Competition Center shop space

Anomali - BattleBots @ RoboJackets **Atlanta, GA | Jan. 2023 – April 2023**

- Designed weaponry for the beetleweight (3 lb) combat robot Anomali using Autodesk Inventor
- Evaluated weapon designs for failure modes with FEA while optimizing geometry, weight, and moment of inertia
- Manufactured 6061 aluminum pulleys for Anomali's weapon system using mill and lathe
- Earned 5th place at regional competition, and 1st place at in-house competition

GT VizTools – Student Innovation Competition for Providing Equity and Access **Atlanta, GA | Nov. 2022 – March 2023**

- Devised an innovation proposal for a VR-based open-source library of digital course content for accommodating students with learning disabilities at Georgia Tech, while providing students an outlet to develop digital content to help peers
- Earned 1st place of 16 student teams from the College of Engineering after presenting idea to the Dean of the CoE

Creative Decisions & Design Robot – ME 2110 **Atlanta, GA | Aug. 2022 – Nov. 2022**

- Designed, built, and programmed a competition robot to complete a series of tasks within a 40s time limit
- Optimized fabrication by applying DFM to rely on precision laser cutting Medium Density Fiberwood and 3D printing
- Successfully built robot under 12"x18"x24" volumetric constraint and \$100 spend limit
- Presented and defended design choices in a design review with industry professionals from companies like Autodesk