

# Guadalupe Cantera

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## EDUCATION

**Brown University, Providence, RI**

**August 2020 – Present**

*Bachelor of Science, Class of 2024: Computer Science and Economics | GPA: 3.50*

**Course Work:** *Data Structures and Algorithms, Discrete Structures and Probability, Software Engineering, Artificial Intelligence, Computer Vision, Computers, Freedom and Privacy, Mathematical Econometrics I, Investments I, Intermediate Calculus, Data Science, Statistical Inference, Linear Algebra, Intermediate Macroeconomics, Intermediate Microeconomics*

## WORK EXPERIENCE

**International Business Machines Corporation (IBM)**

**May 2023 – August 2023**

*Quantum SWE Research Intern*

- **Built** a qualitative benchmarking tool in Python to measure and record the performance of Qiskit's transpiler. Measured the performance of quantum circuits based on its runtime, number of gates, ratio of single to multi-qubit gates, and by the number of entangled gates. Met weekly with mentor + team for code reviews and check-ins.
- **Researched** IBM's Qiskit software extensively to analyze the efficiency and effectiveness of the transpilation algorithms used in quantum circuit optimization
- **Organized** file scripts into a single run path to create one framework for the qualitative analysis and wrote the docstrings

*Chair of Quantum Intern Advisory Board*

- **Led** weekly board meetings and planned onsite networking events for 173 interns across the stack
- **Organized** a fireside chat with the Vice President of IBM Quantum, Jay Gambetta
- **Hosted** career-oriented panel discussions with full time employees
- **Created** a handbook for future advisory board members with a list of resources, tips, Dos and Don'ts, how-to tutorials, etc

*Pathways in Technology Early College High School (P-Tech) Mentor*

- **Advised** seven high school students interning in the Houston, TX + New York, NY offices through weekly check-in meetings

**Brown University**

**May 2022 – Present**

*Teaching Assistant: Mosaic+ Program*

*(May 2022 – Present)*

- **Facilitated** and developed online curriculum content, syllabus, discussions, and assignments covering prerequisite CS material for 27 matriculating underrepresented freshmen who intend on concentrating in Computer Science
- **Responsible** for holding online TA hours, facilitating community building activities, and grading assignments
- **Mentor** for the Mosaic+ mentorship program through monthly meetings

*Teaching Assistant: Introduction to Econometrics*

*(May 2022 - August 2022)*

- **Organized** and developed the curriculum for an 8 week summer course for 22 students
- **Responsible** for holding TA hours, recording lectures videos, grading assignments/exams, and monitoring questions via email

## ENGINEERING PROJECT EXPERIENCE

**Scene Classification + Convolutional Neural Networks - (Skill Set: Artificial Intelligence)**

• Built a rudimentary scene recognition model using three different methods: nearest neighbor classifier, bag of words model, and linear SVM. Further refined the model by designing and training CNNs for scene recognition using the TensorFlow system. Trained my model based on 15 vectors to identify objects in pictures by reinforcing the learning algorithm with LIME explainers.

**Tron Game: 2 Player Game With an AI Opponent - (Skill Set: Artificial Intelligence)**

• Built an AI bot to play a grid game, mimicking the game of Tron as seen in the Disney original movie, by incorporating 2 programming designs: the Voronoi heuristic and the alpha-beta pruning algorithm.

**Decision Tree - (Skill Set: Algorithms)**

• Implemented the ID3 algorithm to generate a decision tree from training datasets. Through this project, I learned how to clean large datasets and train models to produce outcomes based on desired heuristics.

## CLUBS AND ACTIVITIES

**Alpha Chi Omega**

*Vice President*

**February 2021 – Present**

*(January 2022 – Present)*

**Society of Hispanic Professional Engineers (SHPE) @ Brown**

**September 2020 – Present**

## ADDITIONAL

**Language:** Bilingual, English/Spanish | **Github:** <https://github.com/gcantera5> | **Tools:** Python, Java, SQL, Qiskit, Git, Visual Studio Code, IntelliJ, StataSE, Figma, React, Google Docs, Microsoft Office Suite, and Macintosh | **Passion:** Diversity, Equity, Inclusion