JESSICA QIU

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EDUCATION

Boston University College of Engineering — Boston, MA
Bachelor of Science in Electrical Engineering — May 2027
GPA: 3.9

EXPERIENCE

BU College of Engineering — Boston, MA
Undergraduate Teaching Assistant - ENG BE/EC 556: Optical Spectroscopic Imaging — Jan 2025 – Present

- Advanced student learning outcomes by leading weekly office hours and providing one-on-one support through email and Zoom, helping students strengthen their understanding of optical spectroscopy and imaging techniques.
- Facilitated course instruction by grading assignments and exams in a timely manner, providing clear and constructive feedback to improve student performance.
- Supported classroom success by assisting with course logistics and reinforcing key concepts in optical spectroscopic imaging during review sessions.

BU Ji Xin-Cheng Research Group — Boston, MA
Undergraduate Research Assistant — Nov 2024 – Present

- Advanced the development of cutting-edge nonlinear vibrational imaging platforms (VREF and SRP microscopy) by assisting two postdoctoral researchers with optical system design, alignment, and validation.
- Conducted precise optical alignment tasks, including pump-probe synchronization and beam characterization, to ensure system reliability and experimental reproducibility.
- Supported experimental biology workflows by culturing and maintaining C. elegans and E. coli (bleaching, chunking, agar plate preparation), enabling robust biological assays.
- Performed fluorescence microscopy on C. elegans gut granules to investigate autofluorescent lysosome-related organelles, contributing to research on aging and stress biology.
- Applied image analysis and informatics tools to extract quantitative insights from spectroscopic and biological imaging data, improving data interpretation and experimental conclusions.

Pulp Internet Corporation — Brooklyn, NY
Software Engineering Intern I — June 2024 – August 2025

- Advanced the company's research on the "attention economy" by engineering interactive storytelling UIs and transcript viewers that transformed structured JSON into scroll-synced timelines, hoverable speaker panels, and dynamic debate visualizations.
- Designed and deployed natural language processing (NLP) pipelines using Python, spaCy, NLTK, and OpenAI models to analyze persuasion strategies in text, improving the efficiency of rhetorical data processing.
- Developed data analysis workflows with pandas and NumPy, creating Streamlit dashboards that visualized personality and rhetorical metrics, enabling faster insight generation for researchers.
- Built vector-field visualization systems (JavaScript, Mapbox, deck.gl) that animated rhetorical dynamics as flowing particle fields, providing novel tools for analyzing debate and transcript data.
- Contributed to cost-savings by automating manual analysis processes into reproducible pipelines, reducing turnaround time for dataset preparation and visualization.

PROJECTS

Acrylic Truss Design Project || Feb – May 2025
Team Leader & Structural Analyst

- Led a 3-person team in designing and fabricating an 8-joint Warren truss, conducting load testing to compare experimental results against theoretical predictions.
- Performed MATLAB-based force and buckling analysis, modeling uncertainty and identifying potential failure modes to explain discrepancies between design and testing.
  Oversaw precision fabrication of acrylic members and reinforced tape joints; evaluated structural performance and documented lessons learned for future design improvements.

FPGA + VGA Implementation of Snake Game || Nov – Dec 2024
Digital Designer

- Designed and implemented a Snake game on FPGA with VGA output, integrating dynamic scoring, difficulty levels, and variable snake speeds.
- Developed Verilog modules for game logic, VGA display control, and player input handling, ensuring smooth real-time performance.
- Applied digital design principles (finite state machines, timing constraints, hardware debugging) to optimize game responsiveness and hardware resource usage.

Biometric Sensor for Exercise Device || Oct – Dec 2024
Team Leader & Circuit Designer

- Led a 4-person team in developing a wearable device to track wrist acceleration and rotation, aimed at improving tennis swing performance.
- Designed and implemented custom circuitry and electronics integration, including motion sensors, Arduino-based control, and haptic feedback drivers.
- Built an interactive user interface enabling athletes to input custom acceleration/rotation thresholds and receive real-time haptic feedback.
- Fabricated and tested a fitness tracker–style prototype, validating functionality through iterative design and on-device testing.

SKILLS

Programming: Python, MATLAB, Verilog, JavaScript
Software Tools: KiCad, LaTeX, Microsoft Office, Revit, OnShape
Equipment: Oscilloscope, Multimeter, Soldering, Arduino, Op-Amps, Diodes

ACTIVITIES

- BU Mars Rover Club, Electrical and Life Detection Team
- BU Society of Women Engineers (SWE), Member
- BU Engineering without Borders, Member