

## EDUCATION

Boston University College of Engineering  
B.Sc., Mechanical Engineering, Robotics  
GPA: 3.99/4.00 (Dean's List)

Boston, MA  
May 2026

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## SKILLS

**Mechanical:** 3D Printing, Laser Cutting, Soldering, Lathe, Milling, Wire EDM, Belt Sander  
**Design Software:** SolidWorks, AutoCAD, Autodesk Inventor, Creo, Fusion360, OnShape, Rhino3D, KiCAD  
**Programming Software:** Python, MATLAB, C, Arduino IDE, HTML, CSS, ROS

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## EXPERIENCE

### Forecast Diagnostics

Research Associate

Boston, MA  
Sep 2024 - Present

- Develop a commercial methodology for rapid antibiotic susceptibility testing (AST) via Surface-Enhanced Raman Spectroscopy (SERS) for the purpose of treating time sensitive life-threatening infections.
- Manage laboratory inventory, ensuring all necessary equipment and materials are acquired.

### Regeneron Pharmaceuticals

Manufacturing Engineering Intern

Rensselaer, NY  
May 2024 - Aug 2024

- Implemented process analytical technology (PAT) to automate downstream protein purification processes, ensuring compliance with federal regulations and Good Manufacturing Practice (GMP) standards.
- Developed a prototype for a single use manufacturing process, resulting in annual savings of approximately \$8 million.
- Presented the project at a company-wide poster exposition and a departmental conference.

### Boston University

Undergraduate Research Assistant, Albrow Laboratory

Boston, MA  
Jan 2024 - May 2024

- Explored the application of Raman spectroscopy in detecting early indicators of osteoarthritis through cartilage health analysis.
- Enhanced the MATLAB Raman processing code by integrating multivariate analysis techniques to include subchondral bone components.

### Boston University

Undergraduate Research Assistant, Ziegler Laboratory

Boston, MA  
Jan 2023 - May 2023

- Conducted experiments to determine the feasibility of Surface-Enhanced Raman Spectroscopy (SERS) for rapid antibiotic susceptibility on a team of 3 members.
  - Handled bacteria and antibiotics leveraging various laboratory equipment including a centrifuge, infrared spectrometer, Raman spectrometer, automated pipette.
  - Wrote MATLAB script templates enabling seamless transformation of spectrometer data into professional graphs for presentations and publication purposes.
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## PROJECTS

### Room Occupancy Monitor

- Led the design and assembly in a cross-disciplinary team of four to create a room occupancy monitor.
- Created the design using CAD software such as SolidWorks and OnShape.

### RFID Keycard Door Lock

- Assembled a practical RFID door lock system employing a servo motor and a pulley mechanism.
  - Integrated keycard access and configured the mechanism with Arduino.
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## PUBLICATIONS

Fraiman, A., & Ziegler, L. D. (2025). Ultra-rapid, quantitative, label-free antibiotic susceptibility testing via optically detected purine metabolites. *Talanta*, 292, 127907. <https://doi.org/10.1016/j.talanta.2025.127907>