ALLEN FRAIMAN

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EDUCATION

Boston University College of Engineering Boston, MA
B.Sc., Mechanical Engineering, Concentration in Robotics May 2026
GPA: 3.99/4.00 (Dean's List)

SKILLS

Mechanical: 3D Printing, Laser Cutting, Soldering, Lathe, Milling, Wire EDM, Belt Sander
Design: SolidWorks, AutoCAD, Autodesk Inventor, Creo, Fusion360, OnShape, Rhino3D, KiCAD
Programming: Python, MATLAB, C, Arduino IDE, HTML, CSS, ROS2, G-Code, Cellario

EXPERIENCE

Regeneron Pharmaceuticals Rensselaer, NY
Robotics Engineering Intern May 2025 – Aug 2025

- Programmed and operated an Integrated Laboratory Automation System (ILAS) within the Quality Control Automation team to execute automated biologic and binding assays.
- Created Cellario protocols to coordinate liquid handlers, robotic arms, incubators, and plate washers.

Forecast Diagnostics Boston, MA
Research Associate Sep 2024 – Present

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

Regeneron Pharmaceuticals Rensselaer, NY
Manufacturing Engineering Intern 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 single use Raman flow cell prototype resulting in annual savings of approximately $8 million.
- Presented the project at a company-wide poster exposition and a departmental conference.

Boston University, Albro Laboratory Boston, MA
Undergraduate Research Assistant 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, Ziegler Laboratory Boston, MA
Undergraduate Research Assistant 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.
- Wrote MATLAB script templates enabling seamless transformation of spectrometer data into professional graphs for presentations and publication purposes.

PROJECTS

Automatic Pizza Cutter

- Designed and assembled a 3-degree-of-freedom automated system to precisely cut prop pizzas into 8 equal slices.
- Controlled the system with stepper motors and timing belts, integrated with G-code execution via Arduino.

ROSBot

- Interfaced with the robotic system through ROS2 and implemented PID control to enable real-time environmental sensing and response.
- Developed Python modules to control core robot functions, including motor operation, and camera integration using OpenCV.

PUBLICATIONS

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