SOPHIE CAPLAN

sophiecaplan@gmail.com • +44 7518 810028 • linkedin.com/in/sophie-caplan • www.sophiecaplanportfolio.com

EDUCATION

King's College London | London, UK September 2023 - September 2024
Master of Science in Robotics, *Expected First Class degree*

Boston University College of Engineering | Boston, MA September 2019 - May 2023
Bachelor of Science in Mechanical Engineering
Semester Abroad: Dublin City University, Dublin, Ireland January - April 2022

PROFESSIONAL EXPERIENCE

Applied Materials | Gloucester, MA Summer 2022 and 2023
Mechanical Engineering Intern

- Designed electrodes within the ion source for increased source performance through manipulation of plasma and tested new designs in-house, running experiments to monitor ion source performance
- Optimised flanges within semiconductor equipment to withstand high voltage stress during ion implantation
- Verified stress concentrations and vibrational modes of CAD models using Ansys (FEA) and 3D printing before sending engineering drawings to machine shop and manufacturers

Additive Assembly Laboratory, BU | Boston, MA June 2021 - May 2023
Researcher

- Formulated new inks with strong mechanical properties and high stimuli responsiveness for use in four-dimensional printing of scalable structures that can shape-shift on demand
- Developed slicer program, written in Python, to convert CAD files to g-code instructions with custom infill print-path alignment; increased efficiency of testing new inks' anisotropic properties through more rapid printing
- **Publication:** J. Morales, **S. Caplan**, J. W. Boley, "Multiscale Heterogeneous Polymer Composites for High Stiffness 4D Printed Electrically Controllable Multifunctional Structures," *Advanced Materials. Dec, 2023.*

SELECT PROJECTS

Robotic Baby Monitor | London, UK January 2024 - April 2024
KCL Sensing and Perception Module

- Developed audio classification algorithm in Python as part of multidisciplinary team for a robotic baby monitor; applied Kalman filtering to computer vision tasks
- Implemented real-time audio processing and classification techniques to distinguish between sounds such as crying, laughter, and environmental noise, and in turn communicate with Flask server to notify parents
- Simulated and verified results in Gazebo/ROS

Marine Glider Drone for Environmental Monitoring | London, UK September 2023 - April 2024
KCL Robotics Group Project

- Devised autonomous underwater glider drone on multidisciplinary team of MSc students, to collect aquatic environmental data with depth control via change in buoyancy and pitch control via change in centre of mass
- Built custom movable battery pack integrating linear actuators, ESP32 controller, and environmental sensors; designed modular components in CAD, rapid prototyping via 3D printing and laser cutting

SKILLS

Computer	Solidworks, PTC Creo, Ansys, Python, MATLAB, Arduino, LabView, Windchill
Manufacturing	3D printing, Injection moulding, CNC machining, Laser/waterjet cutters, Power tools, Instron, C-Therm

AWARDS

BU Sustainability Innovation Seed Grant December 2022
BU Undergraduate Research Opportunities Program Summer, Fall 2021
Clare Boothe Luce Scholar Award for excellence as a female engineer in research Summer 2021
Collegiate Rowing Coaches Association National Scholar Athlete Award May 2021
Patriot League Honor Roll May 2020

ATHLETICS AND EXTRACURRICULARS

BU Division I Women's Rowing Team - maintained high academic performance as a student-athlete
BU Fashion & Retail Association - fused engineering and fashion design
Theta Tau Professional Engineering Fraternity
Society of Women Engineers