MATTHEW SCHROETER

matthewtschroeter@gmail.com Boston, MA

Design Portfolio: https://matthewschroeter.github.io/

EDUCATION

Northeastern University, College of Engineering **Boston, MA**
Bachelor of Science Degree in Bioengineering Jan. 2018 - May 2022
GPA: 3.6/4.0
Relevant Courses: Transport and Fluids, Finite Element Analysis, Robot Dynamics and Control, System Analysis and Control, Embedded Design: Enabling Robotics, Robot Mechanics and Control, Mechatronics, Biomedical Instrumentation
American College of Thessaloniki (Anatolia College) **Thessaloniki, Greece**
Study Abroad - N.U. in Program Sep. 2017 – Dec. 2017

SKILLS

Applications: SolidWorks, Creo Parametric, Autodesk Fusion 360, FEA, MATLAB, Simulink, Simscape, ANSYS, MS Office Suite
Prototyping: SLA and FDM 3-D Printing, Composite 3D Printing, UV and CO_2 laser cutting, Arduino, Milling, Soldering
Programming: Data Analysis in Python, C++ in Linux on DE1-SoC FPGA board, Logic Schematics

PROFESSIONAL EXPERIENCE

Vicarious Surgical **Waltham, MA**
Mechanical Engineering Co-op – Surgical Robotics Jul. 2021 – Dec. 2021
- Collected user needs and requirements for new verification testing system. Researched multiple 6-DOF robot arms, comparing payload capacity, acceleration, and control latency. Selected and installed robot arm with 6-DOF force sensor
- Designed fixtures to connect force sensor to different Vicarious products for closed-loop force and torque application
- Performed mechanical testing and data analysis to evaluate tensile and flexural properties of materials for future products

Festo Corporation **Billerica, MA**
Mechanical Engineering Co-op – Industrial and Life Science Automation Jul. – Dec. 2020
- Designed and tested vacuum manifold to carry contaminated disposable tips through plasma cleaning system
- Utilized root-cause analysis and FEA to diagnose warping problems with 3D printed prototypes of vacuum manifold
- Renovated liquid handling gantry system and integrated Festo components including pressure/vacuum supply, flow sensor, motor controller, single channel pipettor and tip ejector

CATALOG **Charlestown, MA**
R&D Engineer Co-op – Startup building the world's first DNA-based platform for massive digital data storage Jul. – Dec. 2019
- Developed an FMEA template to systematically tackle failure modes in hardware development and biology experiments
- Planned and executed multi-month project to optimize print quality of inkjet printers used in DNA writing system

RESEARCH EXPERIENCE

NU Students for the Exploration and Development of Space (SEDS) **Northeastern University**
Team Lead - BIG Idea 2022 Extreme Terrain Mobility Challenge Sep. 2021 – Present
- Led team of 12 undergraduate students in the creation of a 20-page proposal detailing a modular robotic snake that combines slithering and tumbling locomotion to explore Shackleton Crater and measure water concentration
- Organized research into lunar environments and mobility concepts and implemented design trade studies to select mobility solutions
- Recently selected as 1 of 7 finalist schools, receiving more than $170,000 to fully develop a working prototype
- Currently leading mechanical, electrical and controls sub-teams to rapidly prototype the COBRA system and develop software for sidewinding, tumbling and sensor integration.
- Designed and fabricated joint modules using carbon-fiber composite 3D printing. Assembled full COBRA system with team members, consisting of 11 joint modules, weighing 6.47 kg and 1.51 meters in length.

Mechanical Team Member – RASC-AL 2021 Venus Flyby Mission Apr. – Jun. 2021
- Designed folding wing drone for reconnaissance on Venus, performing hand calculations for thrust and drag to size drone components and developed detailed internal and external CAD model of folding wing drone concept

Mechanical Team Member - NASA BIG Idea Challenge 2020 Jun. 2020 – Jan. 2021
- Designed and prototyped torque spring mechanism to drive deployment of folded solar panels from collapsed to expanded state. Based mechanism on a car power antenna

Silicon Synapse Robotics Lab **Northeastern University**
Undergraduate Researcher – Bio-inspired Robotics lab Mar. 2019 – Present
- Awarded research grant to develop lightweight actuators to control flight dynamics of flapping wing drone
- Prototyped living hinge mechanical amplifiers for thrust vectoring and implemented design for pitch and yaw stabilization of the drone. Assisted flight experiments and troubleshooting of the system