MATTHEW SCHROETER

Available for full-time post-graduate roles starting May 2022   schroeter.m@northeastern.edu

EDUCATION

Northeastern University, College of Engineering   **Boston, MA**
Candidate for Bachelor of Science Degree in Bioengineering   Jan. 2018 - May 2022
GPA: 3.61/4.0
Relevant Courses: Biomechanics, Bioelectricity, Multiscale Biomechanics, Biomaterials, Transport and Fluids, Finite Element Analysis, Robot Dynamics and Control, System Analysis and Control, Embedded Design: Enabling Robotics

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, 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: C++ in Linux on DE1-SoC FPGA board, Logic Schematics, basic knowledge of Python

WORK EXPERIENCE

Vicarious Surgical   **Waltham, MA**
Mechanical Engineering Co-op – Surgical Robotics   Jul. 2021 – Present
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
- Performed trade study to select final design for steel tip adapter removal
- Researched and spoke with vendors to identify cheaper components and materials

CATALOG   **Charlestown, MA**
Researcher 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
- Designed fixture to illuminate and position microfluidic chips for imaging, presented drawings and assemblies
- Prototyped automatic camera panning system using Arduino to control a stepper motor to stitch photos for image analysis

RESEARCH EXPERIENCE

SiliconSynapse Robotics Lab   **Northeastern University**
Undergraduate Researcher – Bio-inspired Robotics   Mar. 2019 – Present
- Awarded $3000 research award to pursue project titled "Design of Feedback Driven Actuators for Flapping Wing Drone"
- Researched and performed literature review of actuation methods and mechanisms for mechanical amplification
- Prototyped living hinge mechanical amplifiers for thrust vectoring on drone and currently performing flight experiments
- Designed and fabricated 3D printed molds for casting flexible shells to protect exterior of quadruped robotic system

NU Students for the Exploration and Development of Space (SEDS)   **Northeastern University**
Team Lead - BIG Idea 2022 Extreme Terrain Mobility Challenge   Sep. 2021 - Present
Finance Chair - Club Executive Board   Aug. 2021- Present
Mechanical Team Member – RASC-AL 2021 Venus Flyby Mission   Apr. – Jun. 2021
- Researched drones for exploration of Venus, analyzed design trade-offs between hybrid and fixed wing drones
- Performed hand calculations to size drone components, such as airfoil, propeller, and tail for Venus atmosphere
- Developed CAD model of folding wing drone exterior and interior, determining placement of sub-systems and payload
Mechanical Team Member - NASA BIG Idea Challenge 2020   Jun. 2020 – Jan. 2021
- Member of Northeastern team that developed a system to explore the permanently shadowed regions (PSRs) of the moon
- Supported development of collapsible solar panel module that sits outside of the PSR and collects energy to charge a rover
- Designed and prototyped torque spring mechanism which drives deployment of the solar panels from collapsed to expanded state. Based mechanism on a car power antenna
- Collaborated with the electrical team to integrate mechanism with a solenoid to release the springs automatically

PROJECTS

- Embedded Design Class – Implemented Axis-Aligned Bounding Box (AABB) collision detection algorithm in C++, on the DE1-SoC Board. Improved collision detection using Sweep and Prune Method reducing run-time by 10% for 300+ objects

Design Portfolio available upon request