ZACHARY SOMMA

Kingston, NH • (978) 701-5622 • zachary.r.somma.th@dartmouth.edu
https://www.linkedin.com/in/zacharysomma/

EDUCATION

Thayer School of Engineering – Hanover, NH **GPA: 3.90/4.00**
Master of Engineering (MEng) Biomedical Engineering **Expected June 2026**
Bachelor of Engineering (B.E.) Biomedical Engineering **Expected Mar 2026**

Dartmouth College – Hanover, NH **GPA: 3.76/4.00**
Bachelor of Arts (A.B.) Engineering Sciences; Minor in Neuroscience **June 2025**
University of Auckland – Auckland, NZ (*Exchange Semester)* **Feb 2024 – June 2024**

EXPERIENCE

Dartmouth Hitchcock Medical Center – *Neukom Scholars Research Engineer* **Aug 2025 – Present**
Center for Surgical Innovation – P.I. Xiaoyao Fan
- Implementing calibration procedure for a Synaptive Modus Nav exoscope to increase intraoperative navigation accuracy
- Optimizing target registration error for live coregistrations and streamlining data transfer using OpenIGTLink protocols
- Creating a GUI for neurosurgeons to visualize calibration and tool tracking data using Python (OpenCV and PySide6)

Thayer School of Engineering – *Learning Fellow / Teaching Assistant* **Sep 2023 – Present**
- Facilitating group problem-solving and providing individualized support to students in engineering/statistics courses
- Establishing consistent grading standards in collaboration with course professors; evaluating student work

Portsmouth Regional Hospital – *Emergency Medical Technician* **Dec 2023 – Aug 2025**
- Provided basic life support care to patients in emergency room and on over 200 interfacility transports
- Solved problems in a fast-paced environment by synthesizing physiological data, patient story, and other clinical staff inputs
- Navigated hospital communication and documentation systems to coordinate patient transfers within clinical workflows

Palamedes Partners – *Healthcare Consulting Analyst* **Oct 2023 – May 2024**
- Conducted market analysis of class II surgical navigation systems to identify 510(k) predicates and inform business models
- Informed pitch for startup ENTerpoint that won $50,000 from Dartmouth Innovations Accelerator for Digital Health

Psychological & Brain Sciences (PBS) Student Society – *Co-Founder* **Sept 2023 – Sept 2024**
- Created a database with over 100 alumni contacts for current students to seek career and academics related advice
- Organized student events, including trivia night and guest speakers, to foster community within the department

TECHNICAL PROJECTS

Electrophysiology Noise Reduction – *Neural Electrophysiology Design* **Oct 2025 – Present**
- Constructing Faraday cage in microsurgical OR to improve signal fidelity for in vivo electrophysiology recordings
- Testing cage performance by analyzing Intan recordings under simulated procedure conditions in OR
- Analyzing power spectral density plots to identify sources of noise and guide iterative design improvements
- Integrating Faraday cage geometry into surgical research procedure workflows in collaboration with lab neurosurgeon

Garmin Symptom Tracker for Ehlers–Danlos Syndrome (EDS) – *Capstone Project* **Sept 2025 – Present**
- Project Manager leading development of Garmin smartwatch app that synthesizes and presents EDS symptom insights
- Defining user needs and product requirements through patient and physician interviews and targeted literature review
- Developing health-score algorithm that weights HRV spectral peaks, SpO_2, accelerometer data, and reported symptoms
- Communicating with industry sponsors to draft reports and design app for deployment in Garmin API platform
- Managing a $1,500 budget for product testing, FMEA risk analysis, and early provisional patent planning
- Independently developing machine learning classifier using XGBoost to predict targets for EDS gene therapy research

Electrode-Enhanced Thrombectomy Stents – *Intermediate Biomedical Engineering* **Mar 2025 – June 2025**
- Demonstrated feasibility of stents embedded with electrodes to improve first-pass success rate of thrombectomies
- Characterized red blood cell composition of phantom bovine thrombi using electrical impedance spectroscopy
- Modeled electrocoagulation behavior of thrombi using RC circuit analogs and analyzed frequency response with Bode plots
- Determined design specifications, performance metrics, and workflow integrations in collaboration with neurosurgeon

Biophysical Modeling of Epilepsy – *Computational Modeling of the Nervous System* **Apr 2023 – June 2023**
- Simulated effect of epilepsy-inducing sodium channel mutation T875M on L5 pyramidal neuron model using NEURON
- Demonstrated insignificant changes in action potential firing rates, contrasting single compartment models used in literature

SKILLS

Programming & Software: MATLAB, C, Python, LabVIEW, Git, WaveForms, GraphPad, Adobe, ImageJ, Microsoft Office
Embedded Systems: ARM Cortex-M, I^2C, USART, ADC, PWM, interrupts, oscilloscopes, power spectrum analysis
CAD & Fabrication: SOLIDWORKS, Quartus II FPGA, 3D printing, soldering, laser cutting, woodworking
Activities & Interests: Photography Club (Publications Chair), Club Ice Hockey, tennis, fantasy football, skiing, CATAN