David Brenton Svacha

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Education

University of Michigan, Ann Arbor — Ann Arbor, MI
Master of Science in Engineering, Biomedical Engineering — *Aug. 2023 – May 2024*
Concentration: Biotechnology and Systems Biology — *GPA: 3.98*

University of Michigan, Ann Arbor — Ann Arbor, MI
Bachelor of Science in Engineering, Biomedical Engineering — *Sep. 2019 – Apr. 2023*

Experience

Graduate Research Assistant — May 2023 – Present
Systems Biology Lab at the University of Michigan — *Ann Arbor, MI*

- Developed a drug discovery tool using biological data and ML to advance drug-combination research
- Employed Next Generation Sequencing (NGS) and scRNAseq data to refine ML training data
- Utilized MATLAB, R, Linux, SQL, and bash scripting to process and visualize 1,000s of drug predictions

Multisensory Perception Lab at the University of Michigan

- Developed computational methods to identify latent shapes in iEEG data for epileptic patients
- Applied advanced signal processing techniques to characterize non-sinusoidal signals with 80% accuracy
- Utilized PyTorch and other machine learning algorithms to parameterize and extract information of interest

Teaching Assistant — Aug. 2023 – May 2024
University of Michigan — *Ann Arbor, MI*

- Collaborated with professors and colleagues to create assignments and answer keys on time
- Assisted students with problems relating to biofluid mechanics and led 80% of students to get A's
- Taught and partnered with new TA's and graders to ensure quality work

Laborer — June 2020 – Aug. 2020
Huron Valley Construction — *Commerce, MI*

- Unloaded, moved and installed home/office appliances in 5+ locations
- Faceted cabinetry to customers specifications within a 2-week time frame
- Utilized problem solving, communication and various tooling skills to achieve quality work

Projects

CARAMeL-Mtb Drug Discovery Tool | *MATLAB, R, Linux, SQL, Git* — Jan. 2024 – Present

- Developed a computational tool for predicting synergistic drug combos in *M. tb*-transfected macrophages
- Implemented a novel genome-scale metabolic model (GEM) within an existing ML tool in MATLAB
- Computed large parallel processes using the University's high-performance computing (HPC) clusters

Anti-slip Device for Patient Transport | *COMSOL, SOLIDWORKS* — Jan. 2023 – May 2023

- Prototyped a specialized clamp to secure low-friction mats to prevent slippage during surgical procedures
- Conducted validation and verification (V&V) testing in compliance with ISO 9001/13485 and FDA standards
- Performed Failure Modes and Effects Analysis (FMEA) to mitigate risks and enhance patient safety

Mouse-less Computer Cursor Control | *LabVIEW, Python* — Jan. 2022 – May 2022

- Created a mouse-less cursor control system as an ergonomic alternative to traditional computer mice
- Designed an intuitive interface for cursor control which maps EMG signals various muscles to cursor actions
- Utilized LabVIEW, Python, basic circuitry and signal processing, ensuring 93% accuracy

Skills

Languages: MATLAB, Python, C/C++, SQL, JavaScript, HTML/CSS, R
Libraries/Toolboxes: pandas, NumPy, Matplotlib, Seurat, Gurobi, COBRA, SOLIDWORKS, COMSOL, LabVIEW

Soft Skills: Time Management, FDA Compliance, Problem Solving, FMEA, Leadership, Risk Analysis, Project Coordination, Patent Compliance, Innovation, Bioinstrumentation, Mechanical Analysis