Richard Dow

trippdow@gmail.com — 507-535-9243 — GitHub — Website — LinkedIn

Professional Experience

UMN Health Intelligence Lab, Minneapolis, MN — Undergraduate Research Assistant
August 2024 – Present

- Achieved a SOTA F1 score of 87% with the ML pipeline I designed for electrophysiological peak detection.
- Collaborated with clinicians to integrate the pipeline into a desktop app and deploy it into clinical workflows.

Emercent Technologies, Rochester, MN — Software Engineering Intern
August 2023 – August 2024

- Implemented advanced DSP/ML algorithms for physiological signals, such as speech frequency estimation (94% accuracy) and diaphragmatic breathing detection from EMG (almost 100% accuracy).
- Reduced total COGS by over 5% automating production and testing workflows for a novel respiratory sensor.
- Built data pipelines for physiological data at scale, including GUIs, APIs, and Google Cloud tools.

Minnesota NLP Group, Minneapolis, MN — Undergraduate Research Assistant
August 2023 – August 2024

- Led development of a React web app for AI-video generation using the OpenAI API and Synthesia.
- Created speech synthesis, text summarization, and video generation pipelines using Hugging Face.

Michigan State University, East Lansing, MI — Undergraduate Research Assistant
May 2023 – July 2023

- Achieved 98% accuracy on an author name disambiguation model I helped design and prepare data for.
- Managed compute resources and runtime environments on a distributed Linux supercomputer.

Area 10 Labs, Rochester, MN — Summer Intern
May 2022 – August 2022

- Wrote DSP algorithms for spirometric calibration on mobile devices.
- Assisted in the fabrication and soldering of medical devices.

Education

University of Minnesota, Twin Cities, Minneapolis, MN
B.A. in Computer Science. 3.8 GPA. Summa Cum Laude. Mathematics minor, Philosophy minor. 2021 – 2025

Technical Skills

Languages: Python, C, C++, Arduino, Bash, SQL, PowerShell, MATLAB, R, C#, Java, Dart, CUDA
Frameworks: PyTorch, TensorFlow, React, Flutter, Flask, FastAPI, Hugging Face, OpenBCI, Selenium
Tools: Docker, Jira, GitHub, Jupyter, Pandas, Google Cloud Platform (GCP), Postman, Adafruit Bluefruit

Publications

Dow, et al. "A Robust Deep Learning Framework for Detecting Bursts in Muscle Sympathetic Nerve Activity." *Forthcoming*, 47th Annual IEEE Engineering in Medicine and Biology Conference (EMBC), 2025.

Awards & Affiliations

- Awards: UMNTC Dean's List (2021–2025), CS&E Access Scholarship (2024-2025), Dean's First Year Research and Creative Scholar (2021–2022).
- Affiliations: Phi Beta Kappa, IEEE, IEEE EMBS, Society of Research Software Engineering.