Nabeel Chowdhury, PhD

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SUMMARY

Neuroengineer with almost a decade of experience in human clinical trials. Seeking to contribute to a collaborative research environment through skills in neural stimulation, statistical modeling, and signal processing.

EXPERIENCE

PhD Graduate Researcher | **Case Western Reserve University Department of Biomedical Engineering**

August 2017 - January 2025, Cleveland, Ohio

- Executed comprehensive study on touch perception and motor functions, employing implanted nerve cuff electrodes and data collection from 5 human participants.
- Innovated a new metric for evaluating touch perception and migration by integrating machine learning models and conducting complex cluster analysis on a robust dataset collected over 12 years from a cohort of 5 participants.
- Guided a group of 3 to 7 PhD candidates in formalizing research hypotheses and protocols, ensuring the integrity of theoretical foundations.
- Research featured in 60 Minutes, National Geographic, and PBS.
- Programmed custom hardware using Python to communicate between devices, MATLAB to program a neural stimulator, and C++ to minimize race conditions.
- Managed the in-lab experiments for 5 participants, planned the implant surgery for one participant with a team of clinicians, and assisted in the implant of another 5 participants of various neural stimulation studies.

Biomedical Engineer I | **Shirley Ryan AbilityLab**

June 2016 - July 2017, Chicago, Illinois

- Programmed an embedded pattern recognition controller of 3 different liner-based EMG interfaces using C as part of a contract with a major prosthesis company which released to the market in 2023.
- Tested the EMG interface with 3 research participants on a monthly basis to analyze the accuracy of the pattern recognition controller.
- Created custom electrode harnesses to record EMG locally over muscles on 3 different research participants.
- Programmed a computer vision system to track research participants separately from researchers in a waking test to automatically trigger walking state changes of an experimental leg prosthesis.
- Collaborated with a multidisciplinary team of electrical, mechanical, biomedical, and software engineers.

Undergraduate Researcher | **Washington University School of Medicine**

September 2012 - May 2016, St Louis, Missouri

- Utilized imaging software to process CT scans, assisting in preoperative assessments and implant development for craniofacial trauma and pediatric birth defects.
- Led 3D design for a newly formed 3D printing core at the Washington University School of Medicine.
- Created training models for tumor removal (later reported in the new) and hysterectomies as part of the 3D printing core.
- Delivered detailed, interactive seminars demonstrating integration of CAD software and artistic methodologies for bespoke prosthetic fabrication.
- Developed a method of using an MRI of a patient's abdominal wall to custom print a hernia mesh later presented at a conference.

EDUCATION

Doctor of Philosophy - PhD, Biomedical Engineering | **Case Western Reserve University**

4.0, Cleveland, Ohio, 2025

- Advised by Dr. Dustin Tyler
- Dissertation: Pre-perceptual utility of evoked afferent signals by peripheral nerve stimulation

Bachelor of Science (BS), Biomedical Engineering | **Washington University in St. Louis**

St. Louis, Missouri, May 2016

SKILLS

Areas of Expertise: Human Participant Management, Nerve Stimulator Programming, EMG Recording, Lab Management, Research Protocol Design, Grant Writing, Problem Solving, Team Management, Scientific Communication, Interpersonal Skills

Tools: Fusion360, SolidWorks, EAGLE, PCB Design, Failure Mode and Effects Analysis (FMEA), Computer-Aided Design (CAD), Minitab, Microsoft Word, Microsoft Excel, PowerPoint, LaTeX,

Programming/Statistical Modeling: Statistical Analysis, Statistical Modeling, Linear Classification/Regression analysis, Logistic Regression, Clustering, Support Vector Machines, Ensemble Modeling, Random Forests, Artificial Neural Networks, Computer Vision, TensorFlow, PyTorch, Python, MATLAB, C++, R