Ishayu Singh

Biomedical & Electrical Engineer | Emerging Project Leader | AI & Neural Tech Enthusiast | Authorized to work for any US employer | **Top Secret (TS) Clearance**
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Professional Summary

Biomedical and Electrical Engineer with hands-on experience in neural engineering, medical device development, computational modeling, and AI-driven healthcare solutions. Engineering in Training (FE/EIT) certified in Electrical and Computer Engineering with skills in analog/digital circuit design, biomedical sensors, signal & image processing, and LLM/AI integration using Python, MATLAB, and hardware platforms including Arduino and Raspberry Pi. Strong foundation in FDA-regulated device development, quality assurance, and research instrumentation gained through contributions to drug-releasing coatings for neural implants, biologically accurate simulations, and sensor systems development. PMP-certified with demonstrated success in both academic and industry R&D environments, utilizing Agile project coordination and collaborative problem-solving approaches. Cleared at Top Secret (TS) level with capability to contribute to federal, healthcare, and emerging biomedical technology projects.

Education

Master of Science (M.S.) in Biomedical Engineering | Johns Hopkins University | GPA: 3.8 | 08/2024 – 05/2025

Bachelor of Science (B.S.) in Biomedical & Electrical Engineering | Case Western Reserve University | GPA: 3.4 | 08/2020 – 05/2024

Employment History

AI & Software Engineering Intern (Part-Time) | Optisources Inc. | 06/2022 – Present

- Developed and maintained software tools using Python, C++, and HTML to support internal R&D and automation efforts.
- Led multiple self-directed AI/LLM-focused projects, contributing to the exploration of machine learning solutions for company needs.
- Designed and implemented prototypes integrating LLMs (e.g., GPT-based models) to automate workflows and improve technical documentation.
- Conducted independent research on emerging AI trends, presenting findings to leadership to guide product development.
- Applied software development best practices in version control, testing, and documentation for scalable solutions.

Undergraduate Researcher – Neural Engineering & Biomaterials | Case Western Reserve University | 08/2022 – 05/2024

- Conducted research in collaboration with Dr. Capadona's NIH-funded lab on drug-eluting intracortical microelectrodes to reduce neural inflammation and improve implant longevity.
- Designed and performed 40+ drug release assays using titania nanotube arrays, optimizing release kinetics for anti-inflammatory compounds.
- Utilized scanning electron microscopy (SEM) and electrochemical techniques to analyze coating morphology and performance across multiple batches.
- Contributed to a manuscript in preparation for submission to a peer-reviewed journal, highlighting novel findings on controlled-release characteristics of nanotube- based coatings.
- Supported data analysis and technical reporting for project milestones tied to a $1M+ research grant from the Louis Stokes Cleveland VA Medical Center and APTC.

Pharmacy Technician | CVS Pharmacy | 06/2024 – 08/2024

- Fulfilled prescriptions, managed inventory, and processed insurance in a high-volume environment.
- Engaged with patients, pharmacists, and insurance providers to resolve medication-related issues.
- Ensured compliance and multitasking in a regulated, high-pressure setting.

Teaching Assistant – Intro to Circuitry | Case Western Reserve University | 01/2024 – 06/2024

- Facilitated weekly lab sessions for a class of 60+ undergraduate engineering students, providing hands-on instruction in RLC circuits, integrated circuits, and Arduino-based systems.
- Delivered individualized support to over 20 students per week, helping troubleshoot complex circuit designs and reinforcing theoretical concepts.
- Created supplemental learning materials and lab guides that improved student comprehension and lab preparedness by an estimated 25%.
- Collaborated with faculty and other TAs to refine lab experiments, improving instructional flow and enhancing alignment with course objectives.
- Fostered a collaborative, inquiry-driven environment that supported student confidence and technical proficiency in foundational electronics.

Student Researcher – Computational Neuroscience | IIT Madras | 05/2023 – 08/2023

- Designed and implemented a biologically accurate neck musculoskeletal model to interface with neural control algorithms, enhancing the fidelity of existing motor control simulations.
- Collaborated with a multidisciplinary team of 5+ researchers, contributing to the refinement and validation of computational models for motor system function and control.
- Integrated biomechanical modeling techniques with neural network simulations to support the lab's broader goal of replicating sensorimotor coordination in silico.
- Contributed to data interpretation and modeling insights that informed ongoing manuscript development and future simulation studies.

Engineering Intern – Biomedical Sensors | Senseonics Inc. | 06/2022 – 08/2022

- Supported cross-functional R&D and manufacturing teams in testing and validating next-generation implantable glucose sensors.
- Performed performance analysis on 50+ sensor units, identifying key failure modes and recommending design or process adjustments to improve yield and reliability.
- Contributed to process development efforts that reduced sensor testing cycle time by approximately 15%, enhancing lab throughput.
- Conducted root-cause analysis and data-driven troubleshooting to improve sensor accuracy and long-term signal stability.

Certifications

Engineering in Training (FE/EIT) in Electrical and Computer Engineering

Project Management Professional (PMP)

Skills

Hardware & Systems: Analog Circuits, PCB Design (KiCad), RF Control, Arduino, Raspberry Pi, Embedded Systems

Biomedical & Compliance: Medical Devices, FDA Class II/III Devices, ISO 13485, IEC 60601, Biomechanical Modeling, Quality Assurance

Programming & AI: Python, MATLAB, C++, Signal Processing, Image Processing, Machine Learning, NLP, Data Pipelines, LLMs, Ollama

Project & Research: Project Management (PMP), Agile Methods, Data Analysis, Technical Writing, Systems Integration