**JASPREET SINGH**

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**Objective**

Early career bioengineer with 4+ years of clinical experience, machine learning, and neural modeling, seeking to contribute to cutting-edge biomedical innovation. I would love the opportunity to learn and contribute to meaningful work.

**SKILLS**

**Programming**: Python (Pandas, Matplotlib, Seaborn, Scikit-learn, TensorFlow), MATLAB (including Simulink/Stateflow), Intel’s Loihi platform.

**Engineering**: Clinical assessments, neuroimaging (fMRI, tractography), IRB protocol updates, medical device prototyping, human factors engineering, scientific writing, clinical patient care, familiar with Jira/Waterfall, familiar with Windchill.

**Experience**

**Graduate Student Researcher IV** October 2024 - Present

*Rehab Neural Engineering Laboratory (PI: Dr. Brian Dekleva, PhD)*

* Designing and implementing Simulink-based code on a robotic exoskeleton (KINARM) to perform collision and reaching tasks. Real-time success was measured by hand position, velocity, and precision of movement.
* Authoring a comprehensive standard KINARM procedure, to reduce training time for future lab members by several hours and ensuring project continuity.

**Projects**

**Deep Learning Engineer for Segmentation of Hippocampus** September 2024-December 2024

* Designed, trained, and optimized convolutional neural networks (CNNs) including ResNet-18 and Attention U-Net thus advancing research and clinical applications for medical image segmentation.
* CNN Performance was evaluated with metrics such as mIoU and HD95, effectively isolating hippocampal structures from extraneous tissue.

**Neural Engineer for Spiking Neural Network for Keyword Spotting** January 2024 - May 2024

* Developed and trained a Spiking Neural Network (SNN) for a novel application of keyword spotting on Intel’s Loihi platform, leveraging a bio-inspired Leaky Integrate-and-Fire neuron algorithm to mimic biological neural behavior.
* Trained a SNN model to achieve 84% accuracy therefore advancing computationally efficient keyword spotting.

**Regulatory Affairs Engineer for Spinal Cord Stimulator** January 2024 - May 2024

* Provided comprehensive regulatory strategies for a client to inform strategic decisions for the commercialization of a novel spinal cord stimulator device.
* Provided clinical trial guidance for Class III device and FDA compliance strategies aligned with ISO standards (13845) conducted patent and IP research for key stakeholders.

**Medical Device Design Engineer for Rotating Vial Holder Device** September 2023 - December 2023

* Designed and prototyped a rotating vial holder device that reduced procedural errors while it improved safety and increased workflow efficiency during lower lumbar spinal injections.
* Reduced procedure time by 15 minutes per injection, enhancing workflow efficiency, and increasing clinic revenue by up to $6,000.

**Clinical Experience**

**Nursing Assistant & Patient Care Technician** May 2022 - July 2023

* Example responsibilities: monitoring vital signs, glucose/urine tests, bladder scanning, facilitating patient transport or movement, assisting with daily living activities, and collaborate with a healthcare team to ensure optimal patient outcomes.

**Hospital Elder Life Program Intern at UPMC Shadyside & AHN West Penn** Fall 2021, Spring 2022

* Implemented techniques to prevent delirium in a geriatric hospital patient population, contributing to enhanced patient well-being and care outcomes.
* Executed and designed research projects with guidance from Drs. Debra Artim, PhD, and Lisa McIlvried, PhD, to explore the profound influence of social determinants of health on progression of dementia and delirium in geriatric hospital patients. Topics of investigation were focused on critical factors affecting healthcare outcomes and included race, gender, socioeconomic status, and systemic bias.

**Volunteering**

**Outreach Chair & Writer for Pre-Health Spotlight** October 2019 - July 2022

* Facilitated and managed collaborations with organizations including MCAT, DAT, GRE workshops with the Princeton Review and a medical school information session with a representative from Trinity School of Medicine.
* Improved social media visibility and engagement on Instagram by increasing follower numbers and engaging with social media audience.
* Designed social media posts and coordinate collaborations with dozens of organizations across campus.
* Organized multiple virtual medical student panels and research panels attended by 50+ students.
* Wrote an article for publication each semester. Sample topics: Ayurvedic Medicine, Antibiotic Resistance, Sexism in Healthcare, etc.

**Vice President & Freshman Chair for Asha for Education** August 2018 - August 2021

* Arranged collaborations with other organizations in Pittsburgh community including hosting a mock policy hack-a-thon.
* Implemented a volunteer program for club members. Board members alone achieved 600+ volunteer hours during the academic year of 2019-2020 and personally completed 250+ volunteer hours.
* Advocated and raised awareness on factors that affect children’s access to education globally while focusing on region of India, as well as consequences of inadequate access to education has on individuals and communities.
* Developed and coordinated various fundraisers over two years to raise $1,000+ for chosen project in India to build restrooms in impoverished areas of India.

**Leadership**

**Master Student Liaison for Biomedical Engineering Society (BMES**) September 2023 - May 2024

* Organized professional development and networking events for graduate students, fostered collaboration, and represented the University at the BMES national conference.

**Achievements**

**Changemaker Scholar, Big Idea Center** December 2024

* Recognized for demonstration of an entrepreneurial mindset and commitment to cultivating a skillset of immersive and hands-on exploration of innovation.

**Publication** March 2022

* Banihashemi, Layla et al. “Childhood Threat Is Associated with Lower Resting-State Connectivity Within a Central Visceral Network.” Frontiers in psychology vol. 13 805049. 3 Mar. 2022, doi:10.3389/fpyg.2022.805049

**education**

**University of Pittsburgh, Pittsburgh, PA**

**Master of Science in Bioengineering** (Cumulative GPA: 3.84) December 2024

Neural Engineering Track with concentrations in Brain-Computer Interfaces & Medical Devices

**Bachelor of Science in Neuroscience,** Cum Laude Honors (Cumulative GPA: 3.3) April 2022

Minors in Chemistry & Theatre with a Certificate in Conceptual Foundations of Medicine

Undergraduate thesis: *“Childhood Adversity and Perceived Social Standing: Negative Associations of Trauma and Absence of Effects of Perceived Childhood Socioeconomic Status on Resting-State Functional Connectivity within a Central Visceral Circuit”*