Binh Nguyen

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Education

University of California, Santa Cruz — Santa Cruz, CA
Ph.D. Electrical and Computer Engineering — 2023 - Present

University of California, San Diego — La Jolla, CA
B.S. Bioengineering: BioSystems, Minor: Cognitive Science — 2018

Research Experience

Neuromorphic Computing Group and Teodorescu Lab, UCSC — Santa Cruz, CA
Graduate Student Reseacher — September 2023 — Present

- Advancing research in bio-plausible learning rules, neurodegenerative disorders, organoid intelligence, and medical language modeling
- Optimized low-power deep brain stimulation systems using spiking neural networks and reinforcement learning

Mathematical Neuroscience Lab, UCSD — La Jolla, CA
Senior Design Project Team Member — September 2017 — June 2018

- Worked with team members to plan, design, implement, and analyze a new class of dynamic ANNs
- Constructed DJI Flamewheel drone using DIY kit and interfaced with DroneKit Python API
- Achieved 90% accuracy in audio recognition task using k-fold cross-validation methods via TensorFlow

Cartilage Tissue Engineering Lab, UCSD — La Jolla, CA
Undergraduate Researcher — June 2017 — August 2017

- Reconstructed 3D tissue images from 2D cross-sectional images using Digital Volumetric Imaging in MATLAB
- Collaborated with graduate students and lab faculty to implement 2D and 3D cell segmentation techniques
- Elucidated cell variability in superficial and deep zones and found disparities in manual cell counting
- Validated the feasibility of automated cell counting against manual methods in human articular cartilage
- Presented at the 2017 UCSD Summer Research Conference to diverse audience members

Professional Experience

Acutus Medical, Inc. — Carlsbad, CA
Software & Systems Quality Engineer II — March 2022 — July 2023

- Implemented automated regression testing for WPF/C# applications using a custom XPath language
- Accelerated environmental compliance search for thousands of PCB parts using Selenium web automation
- Drafted and executed software test cases for multiple projects and produced detailed bug reports in Jira
- Supported cross-functional teams by developing software quality test plans using Scrum methodologies

R&D Systems Engineer — August 2019 — March 2022

- Built prototyping tools to integrate 3D magnetic tracking capability for next-generation systems
- Developed real-time MATLAB application for reading, monitoring, and plotting multi-modal UDP data
- Trained LSTM models in TensorFlow to detect and predict disturbances in bioimpedance signals
- Performed root-cause analysis on electro-mechanical systems using digital signal processing techniques
- Standardized production systems using clinical site data and reduced number of complaint reports

Clinical Science Engineer Intern — July 2018 — August 2019

- Developed a semi-automatic 3D heart segmentation algorithm for a variety of human left atria
- Characterized a clinical dataset of atrial fibrillation mechanisms based on local and anatomic parameters
- Automated the retrieval, parsing, and organization of data from animal studies and clinical trials

Technical Skills

Machine Learning:	PyTorch, Scikit-learn, Keras/TensorFlow
Programming:	Python, MATLAB, C/C++, SQL, UNIX, Git, LaTeX
Hardware/Instrumentation:	LabVIEW, Simulink, Raspberry Pi, Arduino, PCB, Soldering