

# BINH NGUYEN

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## Education

**University of California, San Diego**

La Jolla, CA

B.S. Bioengineering: BioSystems, Minor: Cognitive Science

2018

## Skills

Programming: Python, Matlab, C, JavaScript, SQL, UNIX, Shell, Git,  $\text{\LaTeX}$   
Libraries: NumPy, Matplotlib, Pandas, Scikit-learn, Jupyter, TensorFlow, Keras, Django  
Systems/Hardware: LabVIEW, Simulink, Raspberry Pi, Arduino, PCB, Soldering, ECG

## Experience

**Acutus Medical, Inc.**

Carlsbad, CA

*Clinical Science Engineer Intern*

July 2018 — Present

- Lead development of a segmentation algorithm for dividing left atrium into 8 distinct spatial regions based on user-selected vertices in Matlab for use as a clinical research tool
- Build, train, and test an RNN-LSTM model on multiple datasets consisting of 200K+ datapoints for detecting disturbances and noise in ECG localization
- Create Matlab script to visualize propagation of conduction velocity vectors and repetitive activation patterns to identify arrhythmic patterns
- Improve ECG signal approximation and catheter localization algorithm by retraining weights on significant channels using amplitude-based thresholding
- Automate the retrieval, parsing, and organization of data from animal studies and clinical trials

**Cartilage Tissue Engineering Lab, UCSD**

La Jolla, CA

*Undergraduate Researcher*

June 2017 — August 2017

- Developed an algorithm for comparing correctly-identified cells in automated program against the gold standard to validate feasibility and reduce labor-intensive tasks
- Reconstructed 3D tissue images from 2D cross-sectional images using Digital Volumetric Imaging from multi-GB struct data types in Matlab
- Collaborated with Master's and PhD students to implement 2D and 3D cell segmentation techniques involving adaptive thresholding and pixel intensities
- Presented research findings at the UCSD Summer Research Conference

*Lab Assistant*

August 2016 — April 2018

- Scanned, processed, and organized micro-CT images in local file system and server database
- Assisted with tissue culture generation, dissection, buffer-making, and staining for research experiments
- Checked, maintained, and serviced lab equipment to increase productivity and prevent downtime
- Wrote, conducted, and updated SOPs, ensuring up-to-date guidelines for lab-wide tasks

## Projects

**Neural Network-controlled Drone via Voice Recognition**

2018

- Constructed DJI Flamewheel drone using DIY kit and interfaced with DroneKit Python API
- Achieved 90% accuracy in audio recognition using k-fold cross-validation methods via scikit-learn/TensorFlow

**Arduino-powered LED Pacemaker**

2017

- Designed ECG circuit with variable components to measure voltage and detect heart beats
- Programmed an Arduino Mega to calculate heart rate and emit a different color LED based on the arrhythmia

## Coursework

Data Analysis, Machine Learning, Statistics and Probability, Data Structures, Algorithms  
Numerical Analysis, Analog Design, Circuits and Systems, Signal Processing,  
Bioinstrumentation, Biomedical Optics, Biomechanics, Human Physiology

## Interests

Neuroscience, Medical devices, Game development, Music, Cooking, Lifting, Hiking, Meeting new people