Amara Nakamura

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Education

California State University of Long Beach – B.S. Graduated: 5/21
Biomedical Engineering (emphasis in Electrical Engineering) Major – GPA 3.1
Computer Science Minor

Relevant Courses: Signal Processing, Data Acquisition/Analysis, Biomechanics I-II, Computational Physiology, Biomedical Instrumentation, Advanced C++, Machine Learning, Algorithms, Linear Systems & Signals, Bio-Fluids & Transport, Bioinformatics & Genomics, STEM Cell/Tissue Engineering, Calculus I-III, Data Structures, Discrete Structures, MATLAB, Research Communication

Work Experience

Student Research Assistant in *CSULB Cardiovascular Research Lab (CVRC)* 10/19 – Present

- Research focus: cerebral perfusion analysis using computational modeling of the brain/arteries
- Presented research poster of 3D-modeling based methodology and findings at CSUPERB 2021
- SimVascular software was used to create cerebral blood vessel models starting from the Left and Right Ventricular Artery up to the extended cerebral arteries within the brain tissue (artificial abnormalities were modeled as well for comparison)
- ITK-Snap's segmentation capabilities were applied to create brain tissue models of each patient case separated by right and left hemispheres for analysis of blood perfusion to each portion
- ParaView software provided visualization of models and allowed co-registration of the cerebrovasculature to the brain tissues
- Co-created CVRC's lab website via WordPress

Tutor

Whiztutor 5/17 – Present

- Private tutoring in Calculus, AP Physics, Algebra II/Trig, Writing, SAT

CSULB College of Engineering MESA Program 9/16 – 5/17

- Led student workshops to engage and empower young, prospective engineers
- Guided students with their project designs for MESA Day Competitions

Student Research Assistant at *CSULB Innovation Space Lab* 11/18 – 10/19

- Extensive literature review on mechanics/biocompatibility of 3D-printed transtibial prosthetics and created a database for analysis
- Foundational experience with 3D-modeling using SolidWorks and Stratasys J750 3D printer
- Writing contributions to early drafts of project's patent and publication process

Student Research Assistant at *CSULB Human Performance and Robotics Lab* 8/16 – 6/17

- Applied biomechanics and data processing to analyze optimal angles for running, lunging and throwing motions in real-time
- Analyzed angle and velocity effects on muscle joints using OpenSim software for injury prevention, physical rehabilitation and sport optimization
- Presented research to College of Engineering dean, faculty, and future student leaders
- Shadowed notable project: smart robotic prosthesis

Leadership

BME Mentoring Club Executive Cabinet (*Connect upper and lower division BME undergraduate students to provide guidance, advice, and open communication across cohorts*)
Pre-Physical Therapy Executive Cabinet (*Community building and career opportunities within health field)*
NSU Executive Cabinet (*Social/cultural inclusivity on campus as a Japanese-Chinese American*)

Skills

Experienced in:

- Matlab
- SimVascular
- ITK-Snap
- Paraview
- Python

Worked with:

- OpenSim
- C++
- EmotivPRO
- Arduino IDE
- Solidworks

Projects

Cerebral Computational Models (*CVRC Research*)

- SimVascular and ITK-Snap based modeling/simulations of patient brain tissue and cerebral vessels to analyze correlations of cerebral blood flow to brain function

Sit-to-Stand Motion Detection Device (*Senior Design*)

- Detection of sit-to-stand motion using IMU and EEG for use in physical rehabilitation and injury prevention (project resulted in 97% classification accuracy)

Volunteering

Jamboree Housing Corporation (*distribute food for families in need and organize donated goods*)
TreePeople (*plant trees in under resourced communities lacking protection from climate impacts*)
Midnight Mission (*rehabilitation clinic and soup kitchen for homeless population in Los Angeles*)