

Stephanie Lace Chang

stephannielchang@gmail.com | (408) 507-3010 | <https://stephanniec.github.io/stepholio/>

Education

Northwestern University

Master of Science, Robotics | GPA **3.95/4.0**

Expected Dec 2017

University of California, San Diego

Bachelor of Science, Bioengineering: Biotechnology | Major GPA **3.74/4.0**

June 2015

Skills

Software	Python, ROS, C, MATLAB, Mathematica, Linux, Git, V-REP, Gazebo, OpenCV, and Android Studio
Prototyping	SolidWorks, NX, Mechatronics (electromechanical design, microcontroller programming), 3D Printing (Polyjet, Fused deposition modeling, Powder bed and inkjet), Laser Cutting, Laser Scanning, and CNC Milling
Knowledge of	Rigid-body Dynamics (Lagrangian, Newton-Euler), Linear and Nonlinear Optimal Control, Machine Learning, PCB Design, Biomaterials and Genetic Engineering

Robotics Projects

Burrowing Robot

Mar 2017 - Present

Designed a novel modular robot which uses helical motion to travel horizontally within granular media. Derived a theoretical model that describes how the parameters of a mounted auger and granular material characteristics can affect the amount of propulsive force generated.

Bilateral Teleoperation of a Robotic Arm

Jan 2017 - Present

Developed a ROS package which allows users to manipulate the trajectory of a 7-DOF robot arm using a Geomagic Touch. Implemented a joint velocity controller with selective least-squares damping for accurate task space control. Estimation of end effector wrenches used to integrate haptic feedback to let users feel forces applied to the robot arm in real-time.

Android Controlled Path-Following Robot

June 2017

Created a differential drive robot that can steer itself around a racetrack. Programmed a PIC32 microcontroller to modulate the velocity of two wheels. Implemented an Android application which locates a path by parsing images scanned by a smartphone camera in real-time, and issues commands to the PIC32 via USB CDC communication to keep the robot centered.

Baxter Plays Checkers

Dec 2016

Built a ROS package which grants Rethink Robotics' Baxter the ability to play checkers. Developed a node network which computes valid moves, performs inverse kinematics to move a 7-DOF arm towards a target position, distinguishes the robot's pieces using OpenCV, and employs visual servoing to correct the end effector's movements.

Cost-Effective HIV Viral Load Monitoring Device

Oct 2011 – Oct 2015

Designed a semi-automated anti-retroviral drug resistance screening system for the Eduardo Mondlane University Hospital in Mozambique for less than \$500 (\$7 per test). Lead the manufacturing process for an Arduino-controlled, pneumatic, RNA extraction device. Authored a paper on the benefits of using blood pooling to lower the cost of HIV diagnostic tests ([PMC4607635](#)).

Work Experience

Life Science Research Professional I, Stanford University School of Medicine (Palo Alto, CA)

Jan 2016 – Aug 2016

- Fabricated epicardial collagen patches, which facilitate heart muscle repair following myocardial infarction, for clinical studies using mice and swine
- Conducted quality control tests to ensure patches were suitable for transplantation into mammals via catheters

Lab Technician I, Sanford Burnham Prebys Medical Discovery Institute (La Jolla, CA)

Aug 2015 – Dec 2015

- Modulated the composition of fluorescent biosensors, developed during a previous internship, to improve their sensitivity to endogenous microRNA fluctuations in healthy and stressed rat neonatal ventricular cardiomyocytes

Intern, Sanford Burnham Medical Research Institute (La Jolla, CA)

Oct 2014 – June 2015

- Identified microRNA species which are differentially regulated in healthy and hypertrophic cardiomyocytes
- Synthesized a set of novel mRNA biosensors that, when transfected into cells, fluorescently detect for mechanical and norepinephrine-induced stretch in cardiomyocytes