

Elton Cheng

elton.c22@gmail.com | 714-261-6556

Education

Northwestern University *Master of Science in Robotics* Sept 2016 to Present GPA: 3.87

University of California, San Diego *Bachelor of Science in Bioengineering* Sept 2011 to June 2015 GPA: 3.18

Skills

-
- Proficient in Python, Java, C/C++, MATLAB, Lua, Mathematica, SQL, Git, GitHub, and Linux
 - Experience working with ROS, SolidWorks, AutoCAD, Eclipse, Android Studio, LabView, Gazebo, and V-REP
 - Knowledgeable in Rigid Body Kinematics and Dynamics, Lagrangian Mechanics, Analysis/Design of Linear Control Systems, Optimal Control of Non-Linear Systems, Mechatronics, Microcontrollers, Machine Learning, Computer Vision, and Computational Geometry

Projects

Portfolio: <https://echeng22.github.io>

-
- **Design of a Mecanum Wheeled Mobile Robot** – Assembly and design of a four mecanum wheeled robot. Developed microcontroller software to control wheel velocities and provide odometry of the mobile robot. Modified the robot to allow for the addition of a Linux computer and other manipulator attachments to the robot.
 - **Simulation Tool for Decentralized Multi-Robot Cooperative Manipulation** – Simulation tool in V-REP used for the development of high-level control software for a system that allows 3 or more mobile manipulators to cooperatively position a large-scale manufacturing component.
 - **Recognize Playing Cards with Machine Learning** – Comparison of multiple machine learning algorithms and their accuracies when trying to recognize the value of a playing card. Course project used to understand which algorithm is preferred for certain situations, and how to gather and process training data to create a robust and accurate model.
 - **Path Following Robot with Android** – Assembly and design of a two-wheeled robot that follows a path. Learned how to program a PIC32 microcontroller to control two motors and a servo. Android computer vision app created to search for where the path is and communicate commands to the microcontroller to move the robot.
 - **Baxter Shell Game** – Software enabling Rethink Robotics' Baxter to find a cube and track its location while it is hidden and shuffled under three cups. Course project used to apply lessons, which include ROS, inverse kinematics solvers, and motion planning tools, to a physical robot in the real world.

Work Experience

Software Test Technician I *Panasonic Avionics Corporation* Feb 2016 to Aug 2016

- Tested In-Flight Entertainment Systems using System Acceptance Test Procedures. Ad-hoc methods were also used to find edge cases not found in test procedures. Used Linux to navigate across various parts of the system during testing.
- Documented failures/unexpected results that occurred during test procedures and described in detail the setup and steps to cause failure.

Lab Assistant *UCSD: Dept. of Orthopaedic Surgery* Jan 2014 to June 2015

- Developed MATLAB software to communicate with lab motor and sensor hardware and automate collection and analysis of 1-D laser diffraction signals from muscle tissue. Optimized methodology to freeze and section muscle samples for 1-D laser diffraction analysis.
- Developed methodology and MATLAB software to capture and analyze 2-D laser diffraction signals from muscle tissue using a webcam.

MATLAB Programmer *Inst. of Geophysics/Planetary Physics* Feb 2013 to Dec 2014

- Created MATLAB code to sort data from a text file, convert into HTML format, and present the data in summary plots. Code also recorded and updated data which met search criterion into text file.
- Created MATLAB GUI to view and classify plots in a user-specified folder. Classified plots are saved and status can be updated/changed in a later session.