CHRISTIAN GUERRERO

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EDUCATION

B.S. Engineering (Emphasis: Aeronautics & Astronautics) | **May 2016**
Cumulative GPA: 2.82 Major GPA: 3.00 Senior GPA: 3.47
Harvey Mudd College, Claremont, CA
• *Dean's List* Spring, Fall 2015, Spring 2016

Relevant Coursework

Differential Equations/Linear Algebra II • Fourier Series/Boundary Value Problems • Intro to Engineering Systems • Intro to Computer Science • Principles of Computer Science • Autonomous Robotics Navigation • Experimental Engineering • Continuum Mechanics • Structural Mechanics • Fluid Mechanics • Theoretical Mechanics • Intro to Compressible Flow • Advanced Transport Phenomena • Management of Technical Enterprise • Ethical Issues in Science & Engineering • Public Speaking

SKILLS

Programming Languages: C/C++, Python, MATLAB, Java, Prolog, LabVIEW, JavaScript, HTML, CSS
Software: Pro-Engineer/Creo Parameric (3D CAD), COMSOL, Linux, Visual Studio, Igor Pro, Microsoft Office
Other: Finite-Element Analysis (FEM), LaTeX, Git, Bread-Boarding, Power Tools, Bilingual (Spanish)

PROJECT EXPERIENCE

The Aerospace Corporation - Harvey Mudd College Clinic Project (team of 5) Fall 2015 – May 2016
• Worked on enhancing the graphical features of the Satellite Orbit Analysis Program (SOAP) as part of an industry-sponsored project using C/C++, Visual Studio, qt, and Cmake
• Implemented realistic smoke into a standalone qt application as one of the final deliverables
• Presented poster and results to students, faculty, and guests at Harvey Mudd College during Presentation's Day
• Presented results to high-level managers at The Aerospace Corporation

Bicycle Wheel Deformation – Final project in *Structural Mechanics* (team of 2) Spring 2015
• Simulated physical deformations by extending 2D MATLAB code for the Direct Stiffness Method into 3D
• Created physical deformations by adjusting spoke tensions, which were calculated by measuring frequencies
• Validated 3D model by analyzing loads and deformation on a bicycle wheel and using COMSOL

Rocket Building & Flying - Final Project in *Experimental Engineering* (team of 4) Spring 2015
• Successfully built, flew, and recovered a Barracuda rocket using 3 different motors
• Calibrated pressure sensors using data sheets, built circuits for rocket, and analyzed post-flight data
• Presented results to students, professors, and guests

Robot Programming
Autonomous Robotics Navigation (team of 2) Spring 2015
• Implemented odometry localization, point-tracking, and particle filter localization on a Dr. Jaguar Lite robot
• Placed 2nd in a team competition (team of 6)
Robotics Lab (team of 2) Spring 2014
• Programmed an AR Drone 2.0 to be controlled with hand gestures using Python, ROS, and a Leap Motion
• Implemented line tracking, laser-based navigation and image processing w/Kinect Camera and Rumba robots

Pool Game - Final Project in *Introduction to Computer Science* (team of 2) Fall 2012
• Created a visually realistic pool program that used visual python programming
• Used classes, recursion, and an incorporated physics module that allowed for realistic game-play

RESEARCH

Aerospace Engineering Research Assistant - University of Illinois at Urbana Champaign Summer 2014
• Debugged and optimized GSAD, an Algorithmic Differentiation program in C++ that exploits matrix sparsity
• Updated outdated CubeSat CAD files using Creo Parametric 2.0/Pro Engineer
• Aided in the construction and preparation of carbon fiber panels for CubeSat
• Obtained a Ham radio license

Physics Research Assistant - Pomona College Summer 2013
• Assisted in the construction, optical alignment, and maintenance of a low-cost Adaptive Optics (AO) system
• Installed and tested Linux OS and imaging cameras for use in the AO system

• Developed a Python script that updated users on the AO system status

WORK EXPERIENCE

Contractor Assistant - Revision Home (Temporary) – Nashville, TN Summer 2015, Summer 2016 – **Present**

• Worked with and applied structural and materials engineering principles in real-world situations
• Gained home remodeling work experience in electricity, plumbing, framing, ceramic tile, among other areas
• Acquired machine-shop experience using power/hand tools and

LEADERSHIP

Teaching Assistant - Harvey Mudd College - Physics Department Fall 2014

• Assisted 20 students with in-class problems and experiments in a materials science physics course

Summer Institute Mentor - Harvey Mudd College - Office of Institutional Diversity Summer 2013

• Mentored 25 students to transition to the academic rigor of Harvey Mudd College
• Facilitated workshops on diversity and privilege with Harvey Mudd staff
• Held daily meetings with 7 students

Student Activist Spring 2013

• Awarded the *Claremont Colleges Chicano Latino Alumni Association Book Award* scholarship for lobbying Tennessee congressmen and against anti-immigrant bills during spring break

PRESENTATIONS & PUBLICATIONS

Presentations Summer-Fall 2014

• Presented oral and poster presentations on *"*Exploiting Matrix Sparsity for Faster Algorithmic Differentiation Techniques," **Guerrero, C**. at the Illinois Summer Research Symposium and at The Southern California Conferences for Undergraduate Research (SCCUR)

Publications Summer 2014

• *"*KAPAO First Light: The Design, Construction and Operation of a Low-Cost Natural Guide Star Adaptive Optics System," Severson, S., Choi, P., et al., **Guerrero, C.**, Proc. SPIE 9148, Adaptive Optics Systems IV, 914839 (July 21, 2014); doi:10.1117/12.2056961; http://dx.doi.org/10.1117/12.2056961

PROFESSIONAL DEVELOPMENT Fall 2014 – Present

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Member