Joshua Vasquez

http://www.doublejumpelectric.com
https://github.com/poofjunior | jvasquez@g.hmc.edu | 626.808.2203

EDUCATION

HARVEY MUDD COLLEGE
Bachelor's of Science in Engineering, 2014

RELEVANT COURSES

CS070: Data Structures
MATH055: Discrete Mathematics
ENGR083: Continuum Mechanics
ENGR151: Engineering Electronics
ENGR155: Microprocessor Systems
ENGR190: Autonomous Robot Navigation

SKILLS

PROGRAMMING
Python • C++ • C • SystemVerilog • Bash • Arduino

VERSION CONTROL
Git • SVN

SOFTWARE TOOLS
Linux OS • Make • SciPy • LinuxCNC • ROS • OpenFrameworks • LaTeX• Altera Quartus

ENGINEERING DESIGN
• Error Propagation through multi-stage electromechanical systems •
• (Parametric) Solidworks •
• Electromechanical (and Software-driven) System Bringup, Debugging, and Failure Diagnosis
• Sensor Calibration

PCBA DESIGN
KiCAD: two and four-layer boards
• BOM Management •
• local and overseas PCB assembly

RAPID PROTOTYPING
Manual and CNC Milling • Laser Cutting • SLA-based 3D Printing

PERSONAL PROJECTS
CO2 Laser Cutter •
Two-Stage Tentacle Mechanism •
Real-time Flexible IMU Chain Visualizer
• Particle Filter Simulation •
Machined Book Holders

EXPERIENCE

ROBERT BOSCH LLC | Hardware Engineering Intern
May 2012 – Aug 2012 and May 2014 - Aug 2014| Palo Alto, CA

- Wrote a collection of MEMs sensor drivers addressable over a generic HAL.
- co-developed the firmware and mechanical design for a ball-balancing robot.

MAYFIELD ROBOTICS | Mechatronics Engineer
Sept 2014 – Oct 2015 | Palo Alto, CA

- wrote embedded firmware and C++ ROS drivers for custom mobile bases
- designed a BLDC motor controller PCBA and firmware
- designed and fabricated several mobile bases to test early product features.

SYNTHEGO | Instrument Software and Electronics Engineer
Nov 2015 – Current | Redwood City, CA

- Re-architected Synthego's RNA synthesizer hardware abstraction layer, making it (and the actual hardware) instrument agnostic. Currently deployed to production on 20 machines that operate 24/7.
- Designed the electronics subsystem including PCBAs and wire harnesses for the current revision of Synthego's RNA synthesizer.
- Designed and implemented a modular electronics architecture for general-purpose factory instrumentation I/O, including 14 PCBAs. One or more PCBAs from this architecture is currently deployed into every type of custom factory instrument on the latest revision of the factory floor.
- Wrote a generalizable instrument software framework for the design of any custom factory instrument that includes a hierarchical state machine framework, a scheduler, a hardware abstraction layer, and a driver layer

HACKADAY | Contributing Author
Nov 2015 – Current

- I publish technical and whimsical articles for an engineering audience.
- *How to Build Anything with Delrin and a Laser Cutter* Part I, Part II, Part III
- *A How-To in Homebrew Design and Fab of Structural Framing Systems*
- *A Noob's Guide to McMaster-Carr*
- *Want to Create a FabLab in your Garage? Start by Joining Your Hackerspace*

RESEARCH

LAB FOR AUTONOMOUS AND INTELLIGENT ROBOTICS
Sept 2013 – Sept 2014 | Harvey Mudd College
• Designed and built a remotely operated rotating underwater sonar mount, addressable over a CAN-bus interface and controlled through a Python node in ROS.

DIGITAL DESIGN COURSE DEVELOPMENT
Sept 2013 – May 2014 | Harvey Mudd College
• Coauthored a Raspberry Pi Peripherals Library with several examples for Digital Design and Computer Architecture (3rd Ed) by David and Sarah Harris

AWARDS

2010	Eagle Scout
2012-2014	Dean's List
2013	Eugene H. Kopp merit-based Scholarship Recipient
2014	Graduated with Departmental Honors in Engineering