

KENJI BOWERS

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Recently graduated Mechanical Engineer holding a Master of Science from Stanford University with strong electro-mechanical design skills. A passionate self-directed learner who can do everything from design and manufacture mechanisms, to program embedded microprocessors. Seeking to get involved with a cutting edge robotics team and use my design and development skills to bring amazing machines with useful capabilities to market.

EDUCATION & SKILLS

Stanford University

Masters of Science in Mechanical Engineering: Mechatronics specialization (GPA 3.65) September 2014 – December 2015
Bachelor of Science in Mechanical Engineering (GPA 3.87) September 2010 – June 2014

- **Notable Coursework:** Machine Design, Internal Combustion Engines, Vehicle Dynamics, Mechatronics, Programming in C++, Systems in C, Robot Control, CNC Machining, Mathematical Methods for Robotics and Vision, Digital Image Processing, Electronics, Linear Algebra, Design and Manufacturing, Fluid dynamics, Thermodynamics

Analog Design Skills: Brainstorming, Need finding, Team design reviews, Sketching, Woodshop skills, Machine shop skills, TIG welding, Carbon fiber composites, Mold design, Design for manufacturability

Digital Design Skills: Additive manufacturing, Rapid prototyping, CNC machining, CAD (Solidworks), CAM, Circuit design (Altium Designer), Lasercuter, Waterjet, Electric motor selection/characterization/tuning, Electromechanical debugging

Software Development Skills: Embedded C for ARM Cortex, Python, Linux Environments, Matlab, C, C++, Java, HTML, CSS, Arduino

PROFESSIONAL EXPERIENCE

Stanford University

Teaching Assistant for Professor Chris Gerdes Stanford, CA
September 2014 – June 2015

- Suggested, lead, and executed the integration of consumer grade 3D printers into the capstone Machine Design class. Designed and printed the parts needed to use off-the-shelf ungeared motors with the Lego ecosystem. This allowed the class to not use the Lego motors (with an integrated gearbox) which increased student learning by making the project more difficult. (Fall and winter)
- Mentored a group of undergraduate students in an effort to make an MRI safe driving simulator controller which mimics the actual driving experience. (Spring)

Intuitive Surgical Inc.

Instruments and Accessories Manufacturing Intern Sunnyvale, CA
June 2013 – August 2013

- Developed an automatic manufacturing station which uses pneumatics to securely attach and detach a manufacturing aid to a surgical instrument. This drastically reduced tack time and human error by automating a worker's task. Designed, prototyped, tested, made drawings, and sent parts out for machining. Asked to return summer of 2014.

Renovo Motors Inc. (High performance electric vehicle startup)

Mechanical Engineering Intern specializing in Composites Campbell and Gilroy, CA
June 2012 – August 2012

- Designed and manufactured carbon fiber parts using vacuum resin infusion. Began by wiring 480V 3 phase into a shop, brought a used CNC router online, milled the plug out of MDF, finished the plug by priming and sanding, created the mold with fiberglass and tool coat, and manufactured the carbon parts from the mold. Asked to return during the 2012 – 2013 school year and summer of 2013.

RELEVANT PROJECTS

3D Printed Gardening Robot

Developing a vision guided precision agriculture robot SF Bay Area, CA
January 2016 – July 2016

- Designed and developed a vision guided robot which can precisely dispense water from the end effector of a 2 degree of freedom SCARA robotic arm. Waterbot is a camera enabled connected device allowing only remote plant watering at the moment but will have autonomous control in the near future. The robot is mostly 3D printed and is powered by a Raspberry Pi and an ARM cortex microprocessor. See my website for video.

Autonomous Racing Go Kart

Team project for Mechatronics Class ME218B Stanford, CA
January 2015 – March 2015

- Worked on a team of four to build an autonomous Go Kart from the ground up using the TIVA Launchpad ARM Cortex board.
- Personally designed the drive train of the kart using Legos and 3D printed parts, manufactured encoders for each wheel, built the encoder circuitry, and implemented PID position and speed control in embedded C.

Delta 3D Printer

Building a Large Delta 3D FDM Printer Stanford, CA
September 2013 – September 2014

- Designed and built my own delta style 3D FDM printer. The printer has a large cylindrical build volume of 17" in diameter by 17" in height and can print much faster than an Ultimaker 2. The frame is all metal and was manufactured by milling aluminum extrusions and combining them with water jet parts.

CNC Machined Indoor Train

In-room service robot concept created for CNC Machining Class ME318 Stanford, CA
January 2014 – April 2014

- Designed and machined an indoor service robot concept for the CNC machining class. Milled a large aluminum block down to a 1mm shell for the train chassis, added a brushless drive motor with a custom transmission to power the train, and rode it on an 80-20 style aluminum extrusion. The train has a dovetailed slot milled on the face of it to hold all sorts of "tools" which could be anything from a cup holder to a small robotic arm.