

KENJI BOWERS

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EDUCATION

Stanford University

Masters of Science in Mechanical Engineering (Specialized in Mechatronics)

September 2014 – December 2015

Bachelor of Science in Mechanical Engineering

September 2010 – June 2014

- **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, Human Behavioral Biology, Feeding 9 billion

WORK EXPERIENCE

Stanford University

Stanford, CA

Teaching Assistant for Professor Chris Gerdes

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.

Sunnyvale, CA

Instruments and Accessories Manufacturing Intern

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)

Campbell, CA and Gilroy, CA

Mechanical Engineering Intern specializing in composites

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 finally manufactured the carbon parts from the mold. Asked to return during the 2012 – 2013 school year and summer of 2013.

Stanford Solar Car Project

Stanford, CA

Battery Pack Design Engineer

April 2011 – July 2013

- Worked on the lithium-ion battery pack for the 2013 solar car which raced in Australia. Designed the main fiberglass battery box, brick to brick copper bus bars, and the method to secure the battery bricks into the battery box.
- Previous work includes, composite lay ups, machining, and epoxying metal parts to carbon following proper surface preparation.

PROJECTS

Personal Project

Stanford, CA

Building my own 3D Printer

September 2013 – September 2015

- 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. See my portfolio for videos.

Mechatronics Class Project

Stanford, CA

Building an autonomous Go-kart

January 2015 – March 2015

- Worked on a team of four to build an autonomous Go-kart from the ground up using the TIVA Launchpad.
- 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.

Robotics Class Project

Stanford, CA

Landing a Quadcopter on a Kuka arm

September 2014 – December 2014

- Worked on a team of three to land a remote controlled quadcopter onto an autonomously controlled Kuka robotic arm. The quadcopter would first take off from the robot arm's end effector, fly around for a bit, and then after hovering over the Kuka's workspace, cut power. At this point the arm would track the quadcopter with its end effector and safely catch the quadcopter.
- Designed and built the electromagnetic end effector dock as well as helping to design the control algorithm for the Kuka.

SKILLS & INTERESTS

Manufacturing & Design Skills: SolidWorks, HSMWorks, CNC Machining, TIG welding, Waterjet, Composites, 3D printing, Lasercutting, Woodworking, Designing for manufacturability

Programming Skills: Embedded C, C, Python, MATLAB, C++, Java, Linux Shell, HTML, CSS

Electronics Skills: Circuit design, Altium Designer, debugging and testing, AC wiring and electricians work

Interests: Robotic arms, mobile manipulators, autonomous vehicles of all sizes, precision agriculture, computer vision, home automation, advanced small scale manufacturing, clean energy, Jazz, Backpacking, Japan (I'm from Japan and am fluent in Japanese), Cars, Tennis