

Taylor Alexander

Robotics Engineer

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tlalexander.com <https://github.com/tlalexander>
reboot.love <https://github.com/flutterwireless>

Technical Skills

Software Development - C/C++, Python, Java, C#, Bash, HTML, CSS, Javascript, Git, JIRA, Docker, Linux, ROS, Android, ARM

PCB Design - Altium, KiCAD, EagleCAD, SMT PCB Assembly, Embedded Systems, Radio Systems, Motor Control, Switching Power Supplies, Oscilloscopes

CAD/CAM - OnShape, Solidworks, AutoCAD, MasterCAM, CNC Machining, 3D Printing, Design for Manufacturing

Professional Experience

Adecco at Google [X] Robotics - Mountain View CA - Manufacturing Software Engineer

July 2017 - PRESENT

- Daily work involves writing python libraries and programs to support testing of robotic components, subassemblies, and complete assemblies.
- All software undergoes code review and meets Google-wide coding standards.
- Developed a python library for a COTS motor controller used on many of our test stands.
- Used GRPC and C++ to write a slave program for a windows-only sensor DLL that could be controlled from a linux test station.

Adecco at Google [X] Robotics - Mountain View CA - Mechatronics Prototype Engineer

FEB 2017 - July 2017

- Worked on an internal R&D subteam where I designed a custom sensor for robotics including 3 revisions of PCB design (Altium) and complete C++ embedded drivers.

Toyota InfoTechnology Center - Mountain View CA - Robotics Software Engineer

AUGUST 2016 - FEB 2017

- Software Engineer for Toyota's HSR (Human Support Robot) platform.
- Developed C++ software that allows the robot to locate a specific person in any room.
- Created an end to end demo to pick up a water bottle and bring it to a person.
- Built robot training web page with javascript, bootstrap, and roslibjs.

Electric Movement at Google - Mountain View CA - ROS Software Engineer

JULY 2015 - July 2016

- Worked on 5-person software team for ROS based robot.
- Wrote ROS nodes for Human Robot Interaction, LIDAR data processing, and more.
- Designed operator web interface with bootstrap and javascript.
- Designed sonar interface PCB to connect 10 sonar units to a ROS PC via USB.
- Participated in customer strategy meetings and created 24 month development timeline with budget proposal.

Flutter Wireless - Los Gatos CA - Founder and sole Engineer

JAN 2013 - PRESENT

- Raised \$150k from 1600 backers on Kickstarter for Arduino-based wireless device.

- Designed ARM-powered production radio hardware that passed FCC and CE tests.
- Ported Arduino environment to a new ARM processor.
- Wrote radio communication stack including low level drivers & frequency hopping logic.
- Managed overseas production and testing of 8000+ PCBAs

AWS Inc - San Jose CA - Mechanical Engineer

MAY 2006 - JUNE 2013

- Responsible for mechanical design, manufacturing, software development, and daily machine shop operations at an industrial torque sensor manufacturer.
- Wrote Windows database program with C# and SQLite to track customer tool calibrations.
- Worked with Chinese CMs to bring 1000+ PCBAs to production.
- Designed a Windows CE based tablet computer from scratch, using a 400MHz SOC, 7" WVGA display, and capacitive touch panel.
- Wrote an Android tablet app to monitor twenty 100k lb wireless load cells.

Personal Projects

reboot.love JAN 2017 - PRESENT

- Created and maintain a community discussion website where I encourage engineers to come together and design systems that make a positive impact in the world.

Rover: 3D Printed Four Wheel Drive Vehicle NOV 2017 - PRESENT

- Designed two versions of a 4WD vehicle with brushless motors and planetary gearboxes.
- Wrote a python-based control stack for the robot that runs on the raspberry pi.
- Rover V1 and V2 are CC0 open source and the software library is BSD licensed.

Scout: 3D Printed Remote Control Car DEC 2014 - FEB 2015

- Designed snap together gear train, steering assembly, chassis, and electronics cabinet for two generations of remote control car.
- Published to github with open license: <https://github.com/tlalexander/Flutter-Scout>
- Wrote an article for the nationally published MAKE magazine issue #46.

Handheld Brushless Linear Motor DEC 2011 - JAN 2013

- Designed and built a 5 generations of brushless linear motors.
- Simulated motor designs in LUA using FEMM, an open source magnetics simulator.
- Designed/Built 4 generations of motor controllers, using Atmel AVR & SAM7 ARM CPUs.
- Developed a non-contact position sensor and control scheme with ~2mm accuracy.
- Designed a 6-cell lithium battery charger for an onboard 6-cell 2.2Ah lithium battery.
- Filed a patent which included 30+ pages of text and diagrams.

Education

Santa Clara University, Santa Clara CA - Mechanical Engineering - **SEPT 2003 - JUNE 2007**

Publications

Alexander, Taylor L. "Sanctuary, The Machine, and reboot.love: Stories of robots that bring us closer together." Self Published May 2018. PDF at: tlalexander.com/static/zine.pdf

Alexander, Taylor L. "The Future of Robotics Technology." *Circuit Cellar* #308 (March 2016): <http://circuitcellar.com/cc-blog/the-future-of-robotics-technology/>

Alexander, Taylor L. "3D Print a Badass RC Race Car" *MAKE* #46 (August-September 2015): <http://makezine.com/projects/3d-print-badass-rc-race-car/>