
Taylor Alexander

Mechatronics Engineer

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

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Technical Skills

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

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

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

Professional Experience

Toyota InfoTechnology Center - Mountain View CA - Robotics Software Engineer

AUGUST 2016 - DEC 2016

- Software Engineer for Toyota's HSR (Human Support Robot) platform.
- Developed software that allows robot to efficiently locate a specific person in any room.
- Created end to end demo to pick up an object and bring it to a person.
- Wrote publisher for RVIZ in C++ that overlays a field of data on a map.
- Built robot training web page with javascript, bootstrap, and roslibjs.

Electric Movement at Google - Mountain View CA - Software Engineer

JULY 2015 - July 2016

- Worked on 5-person software team for ROS based robot.
- Tracked issues and development in JIRA and coordinated daily with team.
- Attended daily Hardware Team meeting and served as HW-SW team liaison.
- Wrote several ROS nodes for processing LIDAR scan data.
- Designed operator web interface with bootstrap and javascript.
- Designed sonar interface PCB to connect 10 sonar units to a ROS PC via USB.
- Researched 3D sensing systems. Explored the software and hardware implications of different sensing options and recommended move to IFM Time of Flight cameras.
- 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
- Administer multiple web servers for business operation.
- Flutter's goal is to lower the cost of robotics and get more people making robots.

AWS Inc - San Jose CA - Mechanical Engineer

MAY 2006 - JUNE 2013

- Responsible for mechanical design, manufacturing, and software development at an industrial torque sensor manufacturer.
- Managed daily machine shop operations while developing hundreds of custom parts.
- Wrote Windows database program with C# and SQLite to track daily tool calibrations at a Toyota manufacturing plant.
- 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.
- Created a nuclear cooling tower lift monitoring system comprised of an Android tablet with custom rugged housing, user interface app, and twenty 100k lb wireless load cells.

Personal Project - 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.

Personal Project - 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.
- Wrote motion control software and embedded USB interface software.
- 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 Curriculum

SEPT 2003 - JUNE 2007

Publications

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/>