Tyler Alford

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Education

LeTourneau University — Longview, TX
BS Engineering Conc. Electrical Engineering | Minor in Math *GPA: 3.2* — Aug 2013 | May 2017

Experience

The Boeing Co. — Huntsville, AL
Electrical Design and Analysis Engineer - PATRIOT Advanced Capability 3 (PAC-3) — Dec 2017 | Present

- Active Department of Defense Secret Clearance.
- Supported production test engineers by troubleshooting complex digital control circuit card issues at both the system level and the card level, reducing waste and enabling the program to meet rate goals.
- Responsible engineer for in-production digital control processor circuit card. Walked the design from development into production, including validation testing, solder integrity testing, plastic encapsulated device testing, and production readiness reviews. Assist production engineers with issues encountered during initial production such as complex failures and producibility improvements.
- Worked failure analysis and root cause corrective action for a voltage regulator failure while interfacing closely with the supplier and analysis labs, that resulted in bounding the issue to specific lots. The corrective action ensured that the root cause parameter would be measured on a per lot basis thus preventing the issue from reoccurring, and helped the supplier implement improved process controls to stop future problems before they happen.
- Assisted with developmental troubleshooting of a digital processor board that had failures while booting up under cold environmental conditions, resulting in a short term fix that enabled the board to enter production and a long term redesign to correct the root cause.
- Worked closely with software engineering to troubleshoot a firmware failures on a processor board that only occurred under hot environmental conditions. Pinpointed the issue using a combination of software testing, processor debugging tools, and Xilinx FPGA and CPLD software, and wrote the VHDL code to address the failure.
- Performed initial checkout and testing of a development processor board. Designed solutions for several issues found during testing and implemented temporary white wire fixes to test the design changes. The final design changes are entering production will result in increased factory throughput by cutting down rework by multiple hours per board.
- Update and maintain Labview based test software, including writing new tests, usability and user interface updates, and bug fixes. Also worked with Corelis JTAG tools to implement new in-circuit tests and correct issues with existing tests.
- Support trade study activities for next generation circuit card designs including power studies, system design, architecture block diagrams, component selection, and circuit card pin-outs, while ensuring that system level designs will meet customer requirements and function within set limits.
- Design high speed ADC circuit card using Mentor Graphics Xpedition Designer for schematic capture, PSpice, LTSpice, and SIMPLIS for circuit simulations, while ensuring that the design works within the larger system requirements. Support layout and analysis activities for signal integrity, RF analysis, and power integrity.

PartSnap — Grand Prairie, TX
Engineering Intern — Jan 2015 | Aug 2016

- Manage commercial 3D printers, take orders, and perform maintenance when required.
- Design and prototype a custom 3D printer for future production.
- Convert 2D drawings to 3D CAD files using SolidWorks.
- Work with clients for design and product development.
- Design and implement a spring manufacturing design tool.

LeTourneau University — Longview, TX
3D Printer Lab Instructor — Aug 2014 | May 2016

- Instruct freshman engineering students through the assembly, tuning, and use of a 3D printer.
- Help students learn the basics of design engineering.
- Selected by professor for outstanding work in previous years.

Skills

Programming: Python, LabVIEW
Design Software: Mentor Graphics Xpedition DxDesigner, Altium CircuitMaker, LTSpice, PSpice, MultiSim, Solidworks
Other: 3D Printing, Linux homelab, Electrical Lab Equipment, Soldering

Personal Projects

Autonomous Lawnmower 2021 - 2022
Ongoing personal project for learning ROS (Robot Operating System), Python, and robotics. Using a custom differential drive base with a Linux single board computer for control and sensor fusion of IMU data, wheel encoders, LIDAR, and GPS real-time kinematics.

Boeing 2019 Engineering Week Electrical Design Competition - First Place
Design and test of a system to encode, transmit, decode, and identify two random frequencies using analog circuitry and a single board computer with Python.

Boeing 2020 Engineering Week Electrical Design Competition - First Place
Continuation of the 2019 challenge with improved analog and digital processing.

Senior Design Capstone 2017 - Electrical Team Lead
Lead a team of two seniors and two juniors to design, build, and test a DO-282B compliant ADS-B transmitter. Responsible for power, the analog path, and PCB layout.

Awards

2020 Boeing Stars in Alabama: First Place - Be Empowered
Awarded for technical work on several customer facing issues, facilitating new employee growth, and contributions above and beyond expectations.