Tyler Blaum

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449 142nd Ave. Holland, MI 49424   Cell - 231-883-3213   TBlaum@gmail.com

Profile:

I am an Electrical Hardware/Systems Engineer specializing in FPGA design with a Masters of Engineering in Energy Systems Engineering and a BS in Computer and Electrical Engineering. I have over 13 years of experience in various product sectors performing in a broad range of roles including technical lead of projects, FPGA design, digital design, on-target system integration, high temperature electronics evaluation, and leading proposal efforts. I am an active, passionate, outgoing individual. I am always seeking a position where I am empowered to take on new challenges and have the opportunity to continuously learn.

Skills:

- Strong knowledge of FPGA design methodology
    - Design Entry – VHDL, Verilog, Matlab Simulink
    - Experience with major vendor tools (Libero, Diamond/Radiant, Vivado, Quartus)
    - Simulation/Verification using Questa/Modelsim
    - Timing Analysis
- Schematic capture and hardware design
    - Capture using EAGLE, DX Designer, OrCAD
        - Also layout and routing with EAGLE
    - Simulation using PSPICE and HyperLynx
- Configuration Management
    - Strong knowledge of configuration management best practices
    - Experience with Synergy Change/CM, GIT, SVN
    - Written python scripts interfacing with SVN to ensure test of latest design
- Documentation / Task management / Process
    - Very strong knowledge of Confluence and JIRA
    - Lead of several successful projects
    - Strong history of DO-254 process
    - Experience with Agile process
- Scripting
    - Very strong knowledge of python scripting
    - Experience with Ruby, BASH, MatLab, Tcl
    - Integration of python scripts with FPGA build tools to automate build process
- Lab Competencies
    - Oscilloscope, Logic Analyzer, Function Generator, Frequency Response Analyzer, RS-242/RS-422/CAN, soldering, thermal chambers
- Other competencies
    - C, LabView, Linux OS, Windows OS, MS Office, TeamCity (CI tool), 3D Printing

Work Experience:

BAE SYSTEMS, Electronic Systems   Remote
Current Title: Senior Principal Electrical Engineer   December 2021 – Present

Lead FPGA Design Engineer: December 2021 - Present
- Lead FPGA Design Engineer on flight control system for military aircraft
- Manage a team of engineers of various skill levels
- Responsible for budget and schedule for FPGA design piece of the larger program
- Technical presentations to direct customer and the government
- Drove new verification methodology that is quicker and less expensive than legacy process

- Mentored younger engineers who are recent college graduates
- "Working lead" – still a technical contributor to the several FPGA designs for this program

Gentex Corporation   Zeeland, MI
Last Title: Senior Electrical Engineer   February 2017 – December 2021

Digital Design Engineer: February 2017 - December 2021
- Lead of several FPGA designs for Full Display Mirrors (video processing in a mirror)
- Lead of new prototype technology for sensing different chemicals in air using Lattice iCE40 FPGA
- HW design of in house PCIe carrier card used for video test/simulation. Hundreds built and used throughout the company, including demonstrations at CES.
- Created MIPI data collection module to interface with aforementioned PCIe card for testing and verification
- Wrote onboard memory test in C running on the ARM in a Zynq7000
- Created a logic analyzer within the FPGA to debug issue with SD card on PCB
- Created I2C master module from scratch to replace inferior Xilinx hardened block
- Setup and maintained hardware in the loop test stand to better our FPGA verification
  - Designed, purchased, built hardware, wrote scripts, debugged, maintained
- Developed several test scripts
  - Ruby script to sweep tap values for MIPI ingress over temperature to determine proper timing for the MIPI bus
  - Python scripts for testing and interfacing to our configuration management tool (SVN)
  - VHDL module to detect solder bridge
- Mentored and Managed Interns
  - Led the interview and selection process
  - Mentored and gave day to day tasks to intern
  - Due to pandemic and lack of housing, rented a room in my home to intern
- Performed many hours of drive testing our product to evaluate performance
- Attendance of several Xilinx conferences

Tennant Company   Holland, MI
Last Title: Senior Electrical Systems Engineer   May 2015 – February 2017

Lead Engineer – "IRIS" Telematics Tracking System: October 2015 -February 2017
- Lead day to day task prioritization for software team
- Handled field issues across the globe
- Developed customer facing data presentation
- Met with existing customers across the US and Europe to get feedback to design in to the next generation product.
- Architected next generation product

Hardware Design Engineer: May 2015 – October 2015
- Board design lead for telemetry module
  - Selection of IoT interfaces
  - Schematic capture using OrCAD
  - Power Analysis
  - Layout direction
- EMC testing of existing designs

BAE SYSTEMS, Electronic Systems   Endicott, NY
Last Title: Senior Hardware Engineer   June 2008 – May 2015

737 Max Spoiler Control: January 2014 – May 2015
- Design and maintain 3 FPGA designs to the DO-254 standard

- IGLOO2, Cyclone V, Artix 7
- Designed through Requirements, Code, Test Procedures, Simulations
  - Left position as it was entering test

777x REU Prototype Demonstration: May 2013 – May 2014
- Systems/FPGA engineer and Integration Lead on risk mitigation program for future bid
- Microsemi and Lattice FPGAs
- Integrated with 3000psi hydraulic dual actuators at customer's site.
- Used LabView is communicate with hardware and develop test
- Tuned the control loop parameters by collecting data from step and frequency responses
- Able to increase the bandwidth of the system by 3 times the original solutions
- Was part of the bid team for FPGA selection and resource allocation along with architecture design
- Result was a win for BAE – something that I still remain extremely proud

Various Digital Design Roles: March 2011 – April 2013
- Digital design hardware lead on engine controls for military and commercial applications
  - Schematic capture of digital circuits
  - FPGA/VHDL design engineer
  - Verification of hardware over temperature including signal integrity and timing performance in a lab environment
- Member of DO-254 review board
  - Review requirements, code, test procedures, simulations, results, and overall process for flight critical programs.

High Temperature Electronics Evaluation: February 2012 – April 2013
- Board design lead for high temperature electronics evaluation board as part of the Distributed Engine Control Working Group (through AFRL)
  - Evaluate current high temperature electronics on the market for potential use on hot surfaces of an aircraft engine.
  - Performed layout and routing in EAGLE
  - Performed 3 month endurance test
    - Thermal cycled board from -55degC to +200degC every 4 hours
    - Monitored circuits for continued functionality
  - Created a report with meaning claims and submitted back to the working group

Proposal Lead: March 2010 – April 2011
- Managing various proposal efforts from RFP to submittal
  - Dissecting RFP to requirements
  - Manage development of technical solution and cost volume
  - Work closely with chief engineers and high level business employees to develop competitive solutions

Power Electronics for Military Ground Vehicles: March 2009 – March 2010
- Systems engineer on high power electronics in military ground vehicles
  - Different applications of DC/DC and AC/DC power conversions
  - Writing and integrating control laws using Matlab Simulink for FPGA
- During this time I developed a lecture/lab in digital control for our internal training program
  - Low power buck converter to teach younger engineers how to create different voltages based on control algorithms.

Common FPGA Module Development: June 2008 – March 2009
- Worked with a team to develop repository of reusable FPGA modules
  - Using Xilinx SysGen in Matlab Simulink
  - Developed Requirements, code, and test benches
  - Tested and verified functionality of all modules

Education:

University of Michigan   Ann Arbor, MI
MEng Energy Systems Engineering, G.P.A 3.8   December 2013
Courses included: Hybrid Vehicles, Sustainable Design, Fuel Cells,
                        Renewable Energy, Internal Combustion Engine

Michigan Technological University   Houghton, MI
BS Computer and Electrical Engineering, G.P.A 3.5   May 2008

Northwestern Michigan College   Traverse City, MI
Area of Study/Major: Engineering, GPA 3.8 (57 Credits)   Sept 2004 – Dec 2005

Achievements:
- Several small recognitions for going above and beyond at Tennant
- Selected for exclusive Chief Engineer Mentoring Program in November 2012. Benefit from having a chief engineer as mentor to learn from and gain exposure to various programs and proposals.
- Completed 2-year Engineering Leadership Development Program (originally GE Edison Program) consisting of in-house Technical Development Curriculum and three Leadership Development Conferences
- Multiple time BAE Systems Chairman's Award Bronze Winner
- Completed Fundamentals of Engineering Exam

Personal Interests:

11 time Ironman Triathlete, Hiking, Ultimate Frisbee, Golf, Fishing, Photography, 3D printing, Amateur Radio Operator (General Class), Raspberry Pi / Arduino /FPGA dev board projects