Vincent J. Baier

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Summary

Proven systems engineer with direct experience in software, electrical, and mechanical engineering disciplines. Passion for difficult mathematical problems. Direct project management experience on several projects on the order of millions of dollars in total size including efforts on The Wireless Blast Gauge System and the Boeing 787-9 Primary Flight Control Actuation System.

Experience

BlackBox Biometrics Inc. - Rochester, NY
Engineer III – Senior Systems Engineer **Nov 2014 - Present**

Operations and Project Management

- Own schedule, resource assignment, and milestones for large-scale multi-partner projects.
- Manage day to day development in both waterfall and agile projects using MS Project and JIRA Agile.
- Design workflows for engineering processes to ensure continued quality and efficiency during R&D cycles.
- Develop R&D proposals for customers and technology partners including budget, schedule, work breakdown structure, and projected resource allocation.
- Work with the quality system to refine and improve R&D processes particularly in the arenas of assessing project risk and developing product qualifications.
- Establish good configuration management and engineering change practices including introduction of JIRA issue tracking, code reviews, regular Project Management Reviews, customer-focused validation throughout the project, and configuration management processes using tools like SVN.
- Organize and report ongoing project and product risks to company executives.

Systems Engineering

- Act as system lead for multi-million-dollar R&D projects including development of ultra-low-power wearable systems. Develop Interface Control Documents (ICDs) to integrate with technology partners and guide top-level technology decisions.
- Debug electrical hardware design and identify solutions for hardware issues. Formalize solutions in OrCad. Simulate proposed solutions and guide PCB layout efforts.
- Debug RF communication issues for Bluetooth communication. Check in and out of band emissions and consistent broadcast and receipt of GFSK symbols. Guide simulation and implementation of RF tuning circuitry.
- Design and implement communication protocols for use in wearable sensor systems. Manage protocol implementations across USB, UART, SPI, and BLE interfaces. Bring up and support BLE protocol stacks on Android, iOS, embedded, and PC platforms.
- Develop models in MATLAB and Simulink to determine error sources and weaknesses in six-axis wearable inertial measurement units and blast exposure measurement systems. Develop and verify filter/algorithm chains in MATLAB for final implementation on low-power micro-controller units.
- Translate algorithms to efficient C/C++ for use on small form-factor hardware under low-power conditions. Develop interface code to translate algorithm libraries to desktop, mobile, and firmware applications.
- Develop interfaces to integrate algorithm and communication libraries with modeling and simulation tools. Develop tools in Scilab, MATLAB, LabView, Python, Java, and C# to rapidly analyze sensor data and evaluate accuracy and robustness.
- Review and adjust the design of mechanical test equipment and proposed test scenarios in Solidworks and Autodesk Fusion 360.

*References available upon request.

- Develop test plans and procedures to guide products through qualification and regulatory testing including MIL-STD-810 environmental testing, USB certification, Bluetooth Certification, FCC certification, and live high explosive testing.
- Manage internal productivity applications on our ESXi hypervisor including JIRA, SVN, CodeReviewer, and Mediawiki instances.

Moog Inc. - Buffalo, NY
Development Engineer – Flight Actuation Test Engineer **Nov 2011 - Nov 2014**

Operations and Project Management

- Developed schedule and budget for large-scale mechanical test programs for the 787-9 and A350-900 XWB aircraft. Developed schedules in MS project and own reporting and updates to management including risk burndown reports, earned value updates, and milestone changes due to new scope or changes in resources.
- Developed a large-scale robustness test plan for the A350-900 XWB flight actuation system. Identified deliverables needed to reduce long-term business risk in A350 products by stressing risk areas of the system typically not covered in general aircraft qualification. Organized the final proposal for presentation to VP of engineering.
- Managed the build of mechanical test fixtures in a remote fabrication facility in Bangalore, India. Worked with teams to allocate resources and track ongoing progress.

Systems Engineering

- Ran mechanical test programs for aerospace hydraulic actuation systems. Developed test procedures and identified appropriate coverage for individual tests. Drafted justification and similarity statements to reduce overall scope of testing. Acted as technical reviewer on test reports to verify the technical integrity of testing.
- Developed analysis scripts and algorithms in MATLAB, Scilab, and Python to automate analysis of large test datasets. Verified integrity of resulting algorithms and automated generation of initial pass/fail criteria and integration into test reports.
- Supported the development of system models for the A350-900 XWB flight actuation system in Simulink. Reviewed model designs and verified mathematical integrity and rigor of model outputs.
- Supported revision of mechanical test fixture designs including mechanical calculations implemented in MATLAB and review of solid models and drawings in Siemens NX.

EDUCATION

Rochester Institute of Technology - Rochester, NY
Degree: Master of Science and Bachelor of Science, August 2011
Major: Electrical Engineering
Focus: Robotics

TEACHING

RIT EE Robotics Laboratories
Developed new robotic platforms and lab curricula for undergraduate and graduate robotics courses. Taught basic embedded programming, signal processing, controls, matrix algebra, and machine learning techniques to students. Developed and presented special recitation presentations on frequency domain analysis and matrix algebra in the context of robotic kinematics.

RESEARCH

Distributed Genetic Algorithms **May 2011 – August 2012**
Developed an implementation of a genetic algorithm test framework for use in cluster environments. Identified testability and optimization criteria and developed a scalable framework for use in further research.

PUBLICATIONS

Detection and tracking of high motion objects in arm robotics
Developed a software-based object tracking system for use in later research and robotic vision projects. Published the associated work in the IEEE ICSCCW 2009 Conference.

*References available upon request.