JUSTEN HARPER

SYSTEMS ENGINEER

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EXPERTISE

MANAGEMENT / LEADERSHIP
Engineering Contractor Management
Executive Communication
Technical Planning
Smartsheet

SYSTEMS ENGINEERING
Stakeholder Expectation Definition
Requirements Engineering
Systems Architect
Product Integration
Product Verification & Validation
Systems Troubleshooting
Regulatory & Compliance Testing
Sustaining Engineering
Design of Experimentation
Data Analysis

PRODUCTION MANAGEMENT
Vendor Management & Qualification
Component Sourcing
Work Instruction Generation
Inventory Scheduling (Kanban)

COMPUTER / TECHNICAL
LabView
Python
SolidWorks
Google SketchUp
Adobe Photoshop
Microsoft Office Suite
Google Office
JIRA

PRODUCT DESIGN
User Interface Design
User Experience Design
Design for Manufacturing

EDUCATION

University of California, Santa Cruz
September 2005- June 2010
BS, Astrophysics, BA, Politics

PROFESSIONAL EXPERIENCE

TRIBOGENICS - Playa Vista, California

A startup in west Los Angeles that started from VC and DARPA funding to develop novel portable x-ray technology. Tribogenics transitioned from a small R&D outfit to a company maintaining multiple overseas distributors for its handheld XRF products. HHXRF devices are analytical instruments capable of using x-ray fluorescence to quantify metal compositions in materials.

Project Engineer */ March 2014 - April 2017*

- Designed and executed a competitive analysis of four devices across 82 material samples and three measurement techniques.
  - Designed the experiments and metrics based on in-depth knowledge of the disparate markets we were targeting and on materials used in those markets.
  - Executed controlled experiments and automated using LabView when possible.
  - Cleaned the data across the four device datasets using Python and by hand (Excel).
  - Analyzed the data using Python and Excel.
  - Used data visualization techniques (box plots, scatter plots with regression lines, simple data tables) to tell a story that while our competitors were mature in well-served markets, there were niche opportunities we could explore.
  - Wrote 3 versions of the report: 1-page executive report, 10-page executive report with advanced statistics, and 82-page full report.
- Designed the Watson handheld XRF device utilizing INCOSE and NASA system engineering principles.
  - Conducted market research and over 30 interviews to distill and create the Customer Requirements document — the guiding principles behind the handheld XRF design.
  - Presented requirements and worked with all stakeholders to negotiate scope changes and their effect on schedule, CoGs, and system factors.
  - Led the cross-functional team of electrical engineers, mechanical engineers, industrial designers, XRF scientists, and software engineers through the design and development of the Watson product.
  - Created schedules and deliverables for engineering vendors; tracked budgets, cost of goods, and updated vendors on any scope changes.
  - Created and executed the design integration and verification plan
  - Used LabView, Python, and Java for test automation, data acquisition and analysis.
  - Defined manufacturing methods and processes for product subsystems.
  - Reduced CoGs by 40% and increased reliability by conducting multiple rounds of DFM/DFA analysis.
- Led the effort on achieving FCC, CE, and PSA compliance of Watson with TÜV SÜD.

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- Led the cross-functional team that designed and built the handheld XRF prototype that was used in all investor demonstrations.
  - Fulfilled executive request for release of demo prototype in two months.

R&D Engineer */ November 2013 - March 2014*
- Designed and conducted experiments to test hypotheses regarding the triboelectric effect.
- Conducted and presented a X-Ray Source Market Technology Survey which informed a pivot from focusing on medical imaging to handheld XRF.

MSB TECHNOLOGY - Freedom, California

A 20 employee high-end audio technology developer and manufacturer. MSB Technology primarily produces digital-to-analog converter (DACs) products in the $10,000 to $250,000 range. Their products require precise and reliable vendor relationships and on-site production processes.

Production Manager */ January 2013 - July 2013*
- Managed a team of five direct reports, was responsible for fulfillment of all orders — this included order prioritization, inventory management, electronics fabrication, machine shop coordination, performing custom laser etching, packaging, shipping and receiving.
- Oversaw a team which produced and shipped over $10 million worth of product in six months.
- Devised the company's first set of work instructions for all products and initiated development of standard operating procedures as a move towards standardization, with the help of senior production staff.

Electronics Fabrication Manager */ March 2012 - January 2013*
- Responsible for sourcing and fabrication of all electronic components - including PCB fabrication, component sourcing, PCB assembly and cable fabrication.
- Established and qualified new vendor relationships.
- Established 0% failure rate of electronics in production by instituting protocol of 100% outgoing inspection of critical components from all vendors.
- Reduced costs of all electronics by 30% by intelligent sourcing, planning, and minimized failure rates.

PUBLICATIONS AND INVENTIONS

XRF Device with Transfer Assistance Module
US 20160033430 A1
This is the patent of the Handheld XRF device based off the architecture I developed. The novel aspect of the device is connectivity to the cloud, wherein advanced calculations and reports can be made for given users and given market segments.

Triboelectric Generation of X-Rays: Predictions and Results
Proc. ESA Annual Meeting on Electrostatics 2014
This was the summary of the work that the Tribogenics Lab had conducted from 2013 to 2014. This explains most of the band-rod architecture that is currently in use. My contribution is in experimental design and data analysis. This was a team effort lead by Dr. Van Cleve.