Paul J. White

CONTACT INFORMATION

1601 Houston St. Unit 6 215.527.4316
Austin, TX 78756 pwhitey86@gmail.com
http://www.pauljosephwhite.com/

SUMMARY

Multidisciplinary engineer with experience in Robotics & Automation; Design, Analysis, and Modeling of Electromechanical Systems; and Algorithm, Machine Learning & Software Development. Background includes academic robotics research, 5 years in aerospace engineering - proposal development, research & development, design, analysis and testing and fast paced startup environments.

EDUCATION

University of Pennsylvania, Philadelphia, PA
Ph.D. — Mechanical Engineering (Robotics & Automation) **August, 2011**

Cornell University, Ithaca, NY
B.S., M.Eng. — Mechanical Engineering **May, 2004**

PROFESSIONAL EXPERIENCE

Jaloo Technology, Round Rock, TX

Senior Hardware Engineer **2015 - Present**

- Developing machine learning system in Python and C that recognizes a user's exercise from data from barbell mounted accelerometer and gyroscope.
- Developing exercise rep counting algorithm in Python and C involving signal processing and orientation determination from IMU data.
- Developing C firmware for wireless sensor network of TI CC2650 SoC using Contiki OS.
- Developing mechanical product components including product enclosure in SolidWorks as well as novel strain gauge based device to detect user's weight selection.

Transcriptic Inc., Menlo Park, CA

Member of Technical Staff **2015**

- Developed software drivers in Scala and distributed computing environment for biology sample processing hardware.
- Optimized liquid handling process parameters using Python and calls to REST API of an optimization service.
- Developed computer vision routines using OpenCV and Python to locate cultures on sample plates.
- Developed mathematical models in Scala of process operations to predict expected completion times.

Falkonry Inc., Santa Clara, CA

Staff Engineer **2013 - 2015**

- Developed machine learning tools in Scala that detect, diagnose and predict physical damage in industrial equipment.
- Developed physical dynamical simulations in Matlab that model the evolution of damage.
- Interfaced with customers and built solutions for their industrial equipment health monitoring problems.

Lockheed Martin Corporation - Advanced Technology Center, Palo Alto, CA

Senior Research Scientist **2011 - 2013**

- *Electromechanical Design, Analysis, and Test*

- Designed and analyzed opto-mechanical systems (telescopes, high energy lasers) using ProE/Creo and Abaqus. Analysis includes structural dynamics, coupled fluid dynamics & heat transfer, mapping stray light irradiance to FEA element heating, and thermal expansion. Design includes flexures, composites, and stray light traps. Drafted parts using ASME Y14.5-2009 GD&T.
- Performed analysis (in Abaqus), testing (using National Instruments compactDAQ and LabVIEW), and prototyping (machined apparatus components) for electrical harness stiffness characterization.

- *Software Development, Modeling, & Simulation*
  - Lead development of LabVIEW software to control RF test equipment for satellite payload test on-orbit.
  - Developed software tools for manufacturability analysis for DARPA iFAB project: design rule check (SolidWorks/VBA), tolerance stack-up analysis (CATIA/Java), cost estimation (aPriori/Java).
  - Developed multi-agent virtual manufacturing network simulation in JADE (Java) to explore trade space and find Pareto frontier.
  - Developed formal methods approach to integrated optimal design and verification & validation of complex cyber physical system integrating SysML models with constraint satisfaction solvers (SMT/ASP).

Lockheed Martin Corporation - Space Systems Company, Valley Forge, PA

Senior Mechanical Engineer **2004 - 2006**

- Developed and analyzed thermal math models of GPS IIR/IIR-M satellite using SINDA/FLUINT and TSS. Verified models by correlating models to on-orbit and thermal vacuum data. Supported initial modeling of GPS III satellite concept in I-DEAS.
- Supported thermal vacuum testing of GPS IIR/IIR-M satellite: monitored telemetry and thermocouple data and adjusted heater settings.
- Developed Satellite Tool Kit (STK) interface to real-time telemetry from GPS IIR/IIR-M satellite during launch.
- Developed C and Matlab-MEX routines to import binary telemetry files into Matlab for analysis and anomaly detection.
- Modeled GPS IIR/IIR-M satellite subsystems as single block diagram in Canvas.

Pennoni Associates, Doylestown, PA *Engineering Technician* **2000 - 2001**

- Drafted engineering drawings for municipal civil engineering projects.
- Surveyed and created AutoCAD drawings from collected data.
- Designed storm water basins using specialized software (VTPSUHM).

Research Experience

University of Pennsylvania, Philadelphia, PA

Modular Robotics Lab **2006 - 2011**

- Designed, constructed, tested, and performed experiments with three generations of modular robotic systems. Design included flexure/compliant mechanisms, shape memory alloy actuation, electromechanical components, PCB design, and embedded software development in C.
- Modeled kinematics and dynamics to find external actuation schemes to reconfigure such systems.
- Developed reconfiguration motion planning algorithm and proved its completeness for reaching all possible configurations.
- Developed a general stiffness mechanical model based on 6 DOF springs for modular robot and programmable matter structures in Matlab.
- Developed a dielectric elastomer actuator for a miniature module.
- Supervised several undergraduates in design and manufacturing of robotic modules.
- Supported two grant proposals through preliminary design and experimentation.
- Authored a portion of successfully funded ($600,000, 15 months) grant proposal titled "Chain-

based modular reconfiguration for modular sea base" (DARPA: Tactically Expandable Maritime Platform).

Cornell University, Ithaca, NY
Computational Synthesis Lab **2003 - 2005**

- Designed and implemented all aspects (mechanical, electrical and software) of two generations (2D and 3D) of stochastic modular robotic systems.
- Demonstrated stochastic self-assembly and self-reconfiguration of tile modules on air table (2D) and cube modules in agitated fluid (3D).
- Developed a kinematics simulator Java applet (http://kmoddl.library.cornell.edu/).

Honors and Awards

- SPOT Award: Development of LabVIEW software for MUOS Satellite On-Orbit Test 2013
- Center for Teaching and Learning's Graduate Fellowship for Teaching Excellence for 2009-10
- Ben Wegbreit IFRR Student Fellowship Award, 2008
  Awarded based on the technical strength of the submission and the quality of the presentation.
- Outstanding Teaching Assistant Award in Mechanical Engineering, 2007
  Awarded for exemplary service, initiative, reliability and commitment to students.

Skills

- Languages: Scala, Java, C/C++, LabVIEW, Python, Javascript, JSON, VBA, HTML, XML
- Mathematics Software: Matlab/Simulink, Maple, R
- Software Development: Intellij, Eclipse, Visual Studio, SVN, git, Spark, scikit-learn, SQL, Cassandra, Kafka, Jenkins, ContikiOS
- Mechanical: ProE/Creo, Abaqus, SolidWorks, SINDA/FLUINT, TSS, AutoCAD, DELMIA, CATIA
- Electrical: EAGLE PCB Software, MPLAB (PIC microcontroller IDE), PIC18LF2680, dsPIC30F4011, TI CC2650
- Operating Systems: Unix/Linux, Windows, Mac
- Fabrication: Machining, Laser cutter, 3D printing (FDM/SLA/SLS), EDM, PCB, Shape Deposition Manufacturing
- Equipment: Spectrum Analyzer, Signal Generator, Oscilloscope, National Instruments CompactDAQ

Additional Information

- Eagle Scout, Reading, Rowing, Running, Biking, Swimming