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## Experience

### **Lockheed Martin Space Systems Company**

*Guidance, Navigation and Controls Engineer*

**Newtown, PA**

*October 2010 - Present*

- Refined thruster plume model based on orbit data. Improved fuel estimates saving millions in contract bidding. Received Lockheed's SPOT award as recognition for achievement.
- Validated spacecraft dynamics code by creating 6-DOF multi-body dynamic model in matlab.
- Modeled, designed control code, and supported hardware integration testing for solar array drives.
- Tested, evaluated and helped qualify new control code for dead bus avoidance.
- Coded and validated spherical harmonic earth magnetic field model.
- Performed stability analysis for orbit raising maneuvers and environmental torque analysis.
- Wrote requirements, peer reviewed code, integration tested, and requirements tested flight software to achieve successful qualification of GPSIII flight software.
- Wrote requirements, wrote coding standard, peer reviewed code, unit tested, integration tested and interfaced with customer to support successful qualification of GPSIII hardware/software testbed.
- Participated in rehearsals, launch, orbit raising, and testing and checkout for 4 programs
- Conducted orbit raising, momentum unloading, station keeping, deployments, and in orbit tests
- Created orbit raising and station keeping plans and procedures

### **West Philly Hybrid X Team**

*Chief Research Engineer*

**Philadelphia, PA**

*September 2009 - October 2010*

- Created 2 hybrid cars for top competitor in Progressive Insurance Automotive X Prize
- Lead team of 4 senior mechanical and electrical engineering students in design of control system
- Implemented control system by programming on NI CRIO using LabVIEW with TCP IP touch screen interface
- Designed, CNC and hand machined mechanical systems including throttle by wire and drive train components
- Designed and constructed high voltage and low voltage electrical system including Lilon battery system, safety lock out system, pedal sensors, speed sensors, capacitive fuel level sensors, etc.

### **Drexel Autonomous Systems Lab**

*Evaluating UAV Missions in a Scaled Environment*

**Philadelphia, PA**

*November 2008 - April 2010*

- Designed, helped construct and programmed hardware-in-the-loop UAV testing facility utilizing LabVIEW and C# with UDP remote interface and RS232/RS485 sensor and actuator interfaces
- Programmed 6-axis autonomous helicopter position and velocity controllers based on GPS, accelerometer and magnetometer feedback. Code was simulated in Matlab/Simulink and executed using C# and GUI interface.
- Programmed closed loop velocity controller for target tracking using computer vision
- Designed and executed real world and scaled tests in both ideal and degraded conditions

### **Drexel Autonomous Systems Lab**

*Safe Landing Zone Identification in the Presence of Obscurants*

**Philadelphia, PA**

*November 2006 - October 2008*

- Programmed code, designed/conducted tests to measure laser range finder performance in fog and rain
- Programmed SLAM algorithm in Matlab to recover terrain map from avionics and laser data
- Wrote Matlab code to identify obstacle free landing areas from laser range finder data
- Executed test flights on Rotomotion SR100 helicopter to test safe landing zone ID in the presence of smoke

### **Drexel Autonomous Systems Lab**

*Drexel's Integrated ATV System (DIAS-2)*

**Philadelphia, PA**

*May 2006 - October 2006*

- Lead team of 5 engineering undergraduates in design and construction of autonomous ATV
- Coded GUI and embedded software for vehicle control/GPS waypoint navigation
- Managed scheduling/budgeting tasks for project guided subsystem design and lead system integration
- Delivered robotic vehicle capable of human operation, remote control, or GPS waypoint navigation

**Drexel Autonomous Systems Lab**

*Collision Avoidance Sensor Suite Design*

**Philadelphia, PA**

*June 2005 - April 2006*

- Project lead on FCS Phase I contract to develop collision avoidance system for class II UAV
- Designed and constructed sensor environmental tests per AR 70-38
- Conducted tests on SONAR, Computer Vision, LADAR, UWB RADAR, and Optic Flow sensors
- Analyzed results using systems engineering trade study tools
- Met regularly with VP of Piasecki Aircraft and management from Lockheed Martin to coordinate design effort
- Delivered trade study report and presentation to LSI and Army officials

**Kulicke & Soffa Industries, Inc.**

*Mechanical Engineer*

**Willow Grove, PA**

*Sept 2001 - April 2003*

- Performed solid modeling, static, normal mode and magnetic FEA analysis using I-DEAS and ANSYS
- Programmed Excel interface for oscilloscope and function generator using Visual Basic
- Tested geometric and grayscale pattern recognition software using Visual C++

**Project Based Learning Treasurer**

**September 2010 - April 2013**

**Sustainability Workshop Mentor**

**August 2011 - April 2013**

**Community College of Philadelphia Adjunct Faculty**

**August 2010 - December 2010**

**Drexel High Altitude Balloon Project Lead**

**June 2010 - September 2010**

**Automotive X-Prize Senior Design Advisor**

**August 2009 - June 2010**

**Drexel University Mechanical Engineering Teaching Assistant**

**September 2004 - March 2010**

**Drexel Learning Center Tutor**

**June 2004 - June 2006**

**Research Experience for Teachers Mentor**

**May 2004 - September 2006**

**Education**

**Drexel University**

*Doctor of Philosophy, Mechanical Engineering*

**Philadelphia, PA**

*April 2010*

**Drexel University**

*Master of Science, Mechanical Engineering*

**Philadelphia, PA**

*December, 2007*

**Drexel University**

*Bachelor of Science, Mechanical Engineering*

**Philadelphia, PA**

*June 2004*

**Drexel University**

*Bachelor of Science, Electrical Engineering*

**Philadelphia, PA**

*June 2004*

**Skills**

**Software:** Git, Matlab, Pro-E, Simulink, Visual Studio .NET, SolidWorks, OrCAD, MS Office, MS Project

**Languages/Operating Systems:** Fortran, GCode, C#, Java, Assembly, Visual Basic, C++, Visual C++, Windows, MacOS, Linux, Labview

**Equipment:** Scanning Laser Range Finders, Scanning Laser Vibrometer, Oscilloscope, Function Generator, Power Supplies, Network Analyzer, Circuit Construction

**Tools:** CNC Mill, Manual Mill, Manual Lathe, Vertical Bandsaw, Horizontal Bandsaw, Drill Press, Grinder, Power Tools, Hand Tools

## Honors

- Lockheed Martin SPOT Award July 2012
  - Joseph Carleone Endowed Fellowship June 2007
  - Dean's Fellow 2008-2009
  - Vanguard Scholarship 1999-2004
  - Honors Student 1999-2004
  - AJ Drexel Scholarship 1999-2004
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## Publications

- Sevcik, K.; Hing, J.; Oh, P. "Analyzing UAV Missions in a Scaled Environment: Experimental Results". The 14th IASTED International Conference on Robotics and Applications, Cambridge, MA. 2-4 Nov., 2009.
- Sevcik, K.; Kuntz, N.; Oh, P. "Exploring the Effect of Obscurants on Safe Landing Zone Identification". Journal of Intelligent and Robotic Systems. Aug., 2009.
- Hing, J.; Sevcik, K.; Oh, P. "Development and Evaluation of A Chase View For UAV Operations in Cluttered Environments". Journal of Intelligent and Robotic Systems. Aug., 2009.
- Sevcik, K.; Oh, P. "Testing Unmanned Aerial Vehicle Missions in a Scaled Environment". Journal of Intelligent and Robotic Systems, vol. 54, no. 1-3, pp. 297-305. Mar., 2009.
- Sevcik, K.; Kuntz, N.; Oh, P. "Exploring the Effect of Obscurants on Safe Landing". International Symposium on Unmanned Aerial Vehicles (UAV), Reno NV. June, 2009.
- Hing, J.; Sevcik, K.; Oh, P. "Development and Evaluation of A Chase View For UAV Operations in Cluttered Environments". International Symposium on Unmanned Aerial Vehicles, Reno, NV. June 8-10, 2009.
- Sevcik, K.; Oh, P. "Towards Scaled Designing and Testing of Unmanned Aerial Vehicle Missions". International Design Engineering Technical Conferences (IDETC), Brooklyn, NY. Aug., 2008.
- Sevcik, K.; Oh, P. "Designing Aerial Robot Sensor Suites to Account for Obscurants". International Conference on Intelligent Robots and Systems (IROS), San Diego, CA. Oct., 2007.
- Sevcik, K.; Oh, P. "Unmanned Vehicles, Sensors and Performance Testing for Near-Earth Missions". Systems, Man & Cybernetics Society (SMC) E-Newsletter. Sept., 2006.
- Sevcik, K.; Shah, S.; Collins, J.; Moran, A.; Ellenberg, R.; Perreca, M.; Oh, P. "Project DIAS: Drexel's Integrated ATV System". American Assoc. for Artif. Int. (AAAI), Boston MA. July, 2006.
- Green, W.E.; Sevcik, K.; Oh, P. "Indoor Aerial Robot Competition: Challenges in Search and Rescue Applications". American Assoc. for Artif. Int. (AAAI), Pittsburgh PA, pp. 1735-1736. July, 2005.
- Sevcik, K.; Green, W.E.; Oh, P. "Exploring Search-And-Rescue in Near-Earth Environments for Aerial Robots". IEEE/ASME Int. Conference on Advanced Intelligent Mechatronics (AIM), Monterey CA, pp. 693-698. July, 2005.
- Green, W.E.; Sevcik, K.W., Oh, P. "A Competition to Identify Key Challenges for Unmanned Aerial Robots in Near-Earth Environments". IEEE Int. Conf. on Advanced Robotics (ICAR), Seattle, WA, pp. 309-315. July, 2005.
- Green, W.E.; Barrows, G.; Sevcik, K.; Oh, P. "Autonomous Landing for Indoor Flying Robots Using Optic Flow". ASME Int. Mech. Engineering Congress and Exposition (IMECE), vol. 2, pp. 1347-1352, Washington, D.C.. Nov 2003.