

David H. Ferguson

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- Education:** **Carnegie Mellon University Robotics Institute** – Class of 2010 – **Masters of Robotics** GPA: 3.95/4.0
Thesis: Path Generation and Control for End of Row Turning in an Orchard Environment
Course work included: Machine Learning, Mobile Robot Design, Kinematics Dynamics and Control, Sensors and Sensing.
- Johns Hopkins University** – Class of 2009 – Major: **Engineering Mechanics** Minor: Physics GPA: 3.6/4.0
Graduated with honors
Course work included: Differential Equations, Linear Algebra, Quantum Mechanics, Technical Communication, Electronics and Instrumentation, Signals and Systems, Computer System Fundamentals, Computer Aided Design, Robots Sensors and Actuators, Algorithms for Sensor Based Robotics and a two semester senior project sponsored by the JHU APL.
- Stuyvesant High School**, New York, NY Graduated, June 2005. GPA: 93.4
- Work Experience:** **Comprehensive Automation of Specialty Crops Robotics Researcher** Spring - Summer 2010
Pittsburgh, PA
- Worked with a group on a portion of a large USDA project. The groups goal was the creation of an autonomous vehicle to navigate fruit orchards gathering data and accomplishing repetitive common farm tasks such as mowing and weed spraying. My work focused on the development of the autonomous navigation systems. I developed a method for generating smooth optimal paths with the primary goal being to make the vehicle turn around and enter orchard rows with a particular focus on three point turns. Work involved using optimization, vehicle modeling, and controls techniques. Work culminated in a two week field test at which the vehicle successfully drove autonomously over 20 km in apple orchards.
- Johns Hopkins Senior Design Project Team Member** '09-'10 School Year
Baltimore, MD
- A two semester senior project sponsored the by the Johns Hopkins Applied Physics Lab involving four college seniors including myself. Project focused on the design and construction of a small powerful actuator for a throwable jumping robot. Made extensive use of CAD software, rapid prototyping, and wire EDM to construct a complex miniature spring loaded linear actuator. Project involved biweekly meetings with sponsors, extensive reports, and presentations to engineering professionals.
- Cox & Co. - Aerospace Engineering Company Engineering Intern** Summer '04, Summer '08
New York, NY
- First Summer I helped program and upgrade data acquisition and control system. Included programming in Visual Basic.Net, modifying, upgrading, and repairing electrical systems and interfacing them to a computer via a Data Acquisition Card.
- Second Summer I did reliability analysis of a deicing control unit and helped modify the circuits to solve existing problems. I worked on a second project that involved designing a system to test the lifetime reliability of a helicopter blade heater. Requirements involved developing a system to put a heater under 5000 micro strain at a rate of 60 Hz. Design involved dynamic analysis of a forced mechanical system and building a test system. An iteration of the design is currently being used for testing.
- Johns Hopkins Haptics Lab Summer Researcher** Summer 2007
Baltimore, MD
- Through a Research Experience for Undergraduates Grant (REU), I worked on a project under the guidance of Dr. Kuchenbecker with the goal of determining the importance of the sensation of contact in haptic (touch) feedback. Tasks included designing a novel end effector for a haptic device to display forces and contact in 3 Dimensions, creating a 3-D virtual environment with OpenGL in linux, designing an experiment, and writing a paper. The project culminated in a paper submitted to the Haptics Symposium Conference that was accepted for both a presentation and a demo.

**NASA Ames Robotics Academy
Engineering Intern**

Summer 2006
Moffet Field, CA

Worked on a team of 4 students in a robotic Lab focusing on robotics manipulation. I specifically worked with one other student to repackage and modify the avionics for a robotic arm to be small, lightweight, portable (powered by batteries instead of wall sockets), and integrate a computer. Tasks included, CAD, designing and replacing electrical systems, constructing a custom aluminum box, ordering parts, and working with a budget.

**Freelance Web Design and Tech Support
Personal Business**

Spring '05- Present
New York, NY

Ran a freelance business with brother offering web design and computer repair services. Created dynamic websites using the django framework from top to bottom including artwork and code. Responded to many calls to set up and repair networks, install virus protection, recover lost data, install hardware, and resolve other computer related issues. Dealt with customers in person, through e-mail, and over the phone.

Related

Experience:

Member of Stuyvesant High School **Robotics Team** for four years. Head of Strategy and Design. Worked together with 30-40 teammates to build a 130 lb. robot to compete in "FIRST" national high school tournaments. (For Inspiration and Recognition in Science & Technology). Winners of multiple technical awards, a regional event, and the prestigious chairman's award. (For more info see www.usfirst.org).

Awards and

Honors:

AP scholar, NYC Public Schools Fencing Heisman Trophy Winner, NASA Space Grant Consortium Award, Deans List (5 semesters), Sigma Pi Sigma Physics Honors Society, Pi Tau Sigma Mechanical Engineering Honors Society

Skills:

Knowledgeable in C, C++, Java, matlab programming languages
Website design including the django python framework
Skilled with Autodesk Inventor, Solidworks CAD, Pro Engineer/Mechanica software
Skilled in the use of most machine tools
Highly skilled at computer repair and maintenance

References:

Available upon Requests