Daniel M. Lofaro M.S.EE

website: http://danLofaro.com   email: dan@danLofaro.com

Research Interest   My research interests lie primarily in Humanoid Robotics, Human Robot Interaction (HRI), Human Robot Interfacing, Brain Machine Interfacing (BMI), and Full Body Locomotion/Manipulation.

Programming   C/C++, C#, Python, Java, MATLAB, Basic, LabView

Lab Skills and Tools   PCB Layout and Design, PCB Surface Mount Population, Soldering (Solder and Solder Paste) Use of: Oscilloscopes, Spectrum Analyzers, Function Generators, Volt-Ohm Meters, Amp Meters, Jigsaws, Band Saws, Routers, Drills, etc. Carpentry skills include both metal and wood working.

Fellowships and Awards

NSF-GRFP Honorable Mention   2009
The program recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees in the U.S. and abroad.

NSF-EAPSI Fellow   2008
The primary goals of EAPSI are to introduce students to East Asia and Pacific science and engineering in the context of a research setting, and to help students initiate scientific relationships that will better enable future collaboration with foreign counterparts.

Lester Kraus Award   2008
Awarded to Electrical Engineering student who has shown the greatest promise of developing into a creative and socially responsible engineer.

Dean's Fellowship   2008
Non-need-based award for full-time graduate students designed to assist outstanding applicants.

Education

Drexel University   2008 - Present
PhD Candidate in Electrical and Computer Engineering in Control Systems and Robotics Advisor: Dr. Paul Oh

Drexel University   2006 - 2008
Masters in Electrical and Computer Engineering in Control Systems   Graduated with Honors

Drexel University   2003 - 2008
Bachelor of Science in Electrical and Computer Engineering in Control Systems   Graduated Cum Laude and with Honors

Publications

Humanoid Pitching at a Major League Baseball Game   Humanoids 2012
Authors: Lofaro, D.; Sun, C.; Oh, P.;
Humanoid Robots (Humanoids), 2012 10th IEEE-RAS International Conference

A n-dimensional Convex Hull Approach for Fault Detection   ICCAS 2012
Authors: Lofaro, D.; Lynch, K. Oh, P.;
International Conference on Control, Automation and Systems

Design of Collision-Free Trajectories with Sparse Reachable Maps   IROS 2012
Authors: Lofaro, D.; Ellenberg, D. Oh, P.; Oh, JH.;
Intelligent Robots and Systems (IROS), 2012 IEEE/RSJ International Conference

Humanoid Throws Inaugural Pitch at Major League Baseball Game   URAI 2012
Authors: Lofaro, D.;Oh, P.;
International Conference on Ubiquitous Robotics and Ambient Intelligence

Design of Humanoids as Interactive Musical Participants IASTED 2011
Authors: Lofaro, D.; Grunberg, D. Oh, P.; Kim, Y.; Oh, J.;
International Association of Science and Technology (IASTED), 2011 International Conference on Robotics

Robot Audition and Beat Identification in Noisy Environments IROS 2011
Authors: Grunberg, D.; Lofaro, D. ; Oh, J.; Kim, Y;
Intelligent Robots and Systems (IROS), 2011 IEEE/RSJ International Conference

Towards a musically-aware humanoid for interactive music... EURASIP 2011
Authors: Kim, Y.; Lofaro, D; Batulaa, A; Grunberg, D;
EURASIP Journal on Audio, Speech, and Music Processing

Visual Beat Tracking: A Novel Approach to Tempo Tracking... Humanoids 2010
Authors: Lofaro, D.; Oh, P.; Oh, J.; Kim, Y.;
Humanoid Robots (Humanoids), 2010 10th IEEE-RAS International Conference

Interactive Games With Humanoids: Playing With Jaemi Hubo Humanoids 2010
Authors: Lofaro, D.; Ellenberg, R.; Oh, P.;
Humanoid Robots (Humanoids), 2010 10th IEEE-RAS International Conference

Developing Humanoids for Musical Interaction IROS 2010
Authors: Kim, Y.; Batula, A.; Grunberg, D.; Lofaro, D. ; Oh, J.;
Intelligent Robots and Systems (IROS), 2010 IEEE/RSJ International Conference

Mechatronics Education: From Paper Design to Product Prototype... FIRA 2009
Authors: Lofaro, D.; Le, T.; and Oh, P.;
Progress in Robotics, ser. Communications in Computer and Information Science

Control Design to Reduce the Effects of Torsional Resonance in... MS Thesis 2008
Author: Lofaro, D.
Masters Thesis, Drexel University Department of Electrical and Computer Engineering

Work Experience **Drexel Autonomous Systems Lab** Research Assistant
Philadelphia, PA April 2008 to Present
Researching Complex Control Systems and Robotics. Daniel's dissertation topic is end-effector velocity control for bipedal robots, also known as throwing. Primary care taker of the full-size humanoid robot Jaemi Hubo.

Dragonfly Incorporated Engineer
Philadelphia, PA April 2011 to Present
Testing and modeling of linear actuators for dual rotor unmanned aerial vehicles.

Drexel University Teaching Assistant
Philadelphia, PA April 2008 to Present
Assist professor with electrical engineering lab courses as well as organizing and maintaing Senior Design for the electrical and computer engineering dept.

IEEE (ICRA 2012) Intl conf origination, web des
Piscataway, NJ May 2011 to July 2012
Design and maintain events and website for the International Conference on Robotics and Automation.

NATO (ASI-2012) Technical/Workshop Chair
Cesme, Turkey August 2009 to November 2010
Organize and maintain 6 workshops for an international audience with participation from 23 countries

FIRST Robotics Mentor and Volunteer
Villanova, PA March 2006 to June 2010
Coach/mentors for the all girls high school, Agnes Irwin School (Bryn Mawr, PA), FIRST Robotics team and Philadelphia Regional Competition volunteer.

Moog Component Group   Assistant Design Engineer
Springfield, PA   August 2005 to March 2006
Temperature response testing - Error analysis on positional and rotational actuators - Fault
detection circuit design and implementation for positional and rotator actuators - PCB trace
verification, Trained in MIL-SPEC soldering.

Evaporated Coatings Inc.   Vacuum Deposited Thin Film Assistant Design Engineer
Willow Grove, PA   August 2004 to March 2005
Design and implementation of vacuum deposited tin films for the control of optical, thermal and
electrical surface properties, design using computer simulations. Implementation via vacuum
deposition using electron beam gun.

Extracurricular Activities	**IEEE-ICRA 2012 Student Activity Board Event Organizer** 2012

IEEE-ICRA 2012 Student Activity Board Event Organizer   2012
Designed and implemented student socials and activities for the IEEE-ICRA 2012 conference.
This included a student dinner with a comedian as well as daily events and activities.

Senior Design Robot Competition   2009 - 2011
Designed, implemented, and coached a robot competition for senior students in the Drexel
University Senior Design class. The competition consisted of multiple teams and multiple robots.
Each robot was less then 1.0m x 1.0m x 1.0m and less then 10kg.

Indoor Aerial Robotics Competition   2008 - 2011
Designed and implemented the Indoor Aerial Robotics Competition from 2008-2011. The IARC
was formed in 2005 by Dr. Paul Oh in parallel with the Congressional mandate that requires
30% of all U.S. deep-strike aircraft to be capable of autonomous navigation by 2015. To keep in
line with this mandate, the competition was revised to increase the difficulty each year with the
goal of having a backpack-able vehicle that flies autonomously inside buildings by 2015.

CoE Engineers Week Annual Egg Drop Competition   2007 - 2011
The Egg Drop competition challenges student, faculty, and professional staff teams to create a
recyclable contraption that will protect a large Grade A egg from a free fall of 40 feet or from it
gliding down a steel zip line and crashes into a target more than 30 feet below. Scoring is based
on a mathematical formula that calculates weight and speed.

IEEE Student Branch Technical Chair   2006 - 2008
Drexel University's IEEE Branch Technical Chair. Designed events and activities for IEEE
student branch.

Eita-Kappa-Nu Popsicle Stick Bridge Contest   2008 - 2009
The goal of this competition is to build the lease expensive bridge that can span a 12 inches
gap, have a width of at least 3 inches, and hold a load at its center using only the materials
listed below. The functioning bridge with the lowest materials cost wins. Please note that
this competition is geared towards middle school students to teach them some of the basics of
engineering.

Biannual IEEE Lego Robot Competition   2006 - 2008
Design and implementation of the bi-annual Lego robot competition. The competition has the
expressed goals of enforcing the knowledge the electrical and computer engineering students have
learned in class including robot design, logic and autonomous systems.

NAVY SeaPerch Challenge (regional and national competition)   2009-2011
Judge for high school student robot competition. The SeaPerch Program provides students
with the opportunity to learn about robotics, engineering, science, and mathematics (STEM)
while building an underwater ROV as part of a science and engineering technology curriculum.
Throughout the project, students will learn engineering concepts, problem solving, teamwork,
and technical applications.

Competitions Authored	**Annual: Senior Design Robot Competition** 2009 to Present

Annual: Senior Design Robot Competition   2009 to Present
Participants design, model, and create a functional ground based robot that can quickly, efficiently, and robustly complete required objectives objectives

Annual: Indoor Aerial Robotics Competition (IARC)   2008 to Present

Aerial robotics competition with concentration on autonomous control and decision making.

Drexel University CoE Engineers Week Annual Egg Drop Competition 2007-Present
Contestants create a device that prevents an egg from breaking when dropped from a great height while landing in a high scoring landing zone.

HKN Popsicle Stick Bridge Contest 2008-2009
Created for middle school students in the Philadelphia School District, this competition requires students to design and build a bridge out of simple building materials and hold a substantial weight at the bridges center. The purpose of this competition is to get students to combine design and creativity to solve a real-world problem.

Semi Annual IEEE Lego Robot Competition 2006-2008
Ground vehicle competition with a concentration on design, autonomous world interaction and teli-operated robot interaction