Abishek Hariharan

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Education

University of Southern California, Los Angeles — Jan. 2013 - Dec. 2014
Master of Science, Computer Science -**Intelligent Robotics**
GPA: 3.556

Coursera: Machine Learning. - Andrew Ng — 2011

Udacity: Introduction to Artificial Intelligence - Sebastian Thrun, Peter Norvig — 2011

Birla Institute of Technology, Ranchi, India — 2007 - 2011
Bachelor of Engineering, Computer Science/Artificial Intelligence
Graduated First Class with Distinction

Research Interests

Unmanned aerial systems, robot locomotion, decision making, path planning, neural networks, machine learning, target tracking and localization.

Teaching Experience

Course Producer, USC - Viterbi School of Engineering — Sep. 2014 - Dec. 2014
Teaching assistant, grader and assistant lab guide for the undergraduate robotics course CSCI 445 at the University of Southern California.

Volunteer Lecturer, Teach for India — Jun. 2013 - Jul. 2013
Lecture series on image processing and computer hardware at the middle school level.

Academic Professional Experience

Student Researcher, USC ACT Lab — Nov. 2013 - Dec. 2014
Quad rotor vehicle control and planning using feedback controllers and fiducial visual localization and motion capture.

Senior Engineer, USC Aero Design Team — Jan. 2013 - 2014
- *First Place at 2014 AIAA Student Design/Build/Fly Competition.*

Senior member involved with fabrication, testing and performance sub-teams.
Improved performance of aircraft by employing remote sensing for speed and stability analysis.

Non-Academic Professional Experience

Senior Engineer, Robotics R&D + Firmware, Soloshot Inc. — Apr. 2016 - Oct. 2016
Research and development towards next generation product features to enhance visual tracking and control on flagship device. Android Development. Sensors. C/C++/Java

Firmware and Validation Engineer, at Skycatch Inc. — Nov. 2015 - Apr. 2016
Creating software solutions to capture and validate metrics from flagship aerial robotics platform to meet industrial, military and design specifications. Embedded Systems. Sensors. C++/Python

Technical Skills

Programming Languages
C, C++, Java, Python, MySQL, HTML

Applications/Environments
Arduino, ROS, MATLAB, Git, Bitbucket, Simulink, Vicon -Tracker, Gazebo, Rviz, Android, JIRA, Confluence, Travis-CI, Unix command line.

Fabrication
High performance composites (Carbon fiber, Kevlar, Fiber-glass) . Avionics, actuators and propulsion systems for aerial robotics. EE prototyping.

Robotic Systems
Aldebaran NAO, Maki, Turtlebot 2, AR.Drone 2nd gen., AscTech. Hummingbird, PR2, Skycatch EVO3, Soloshot 3.

Publications

Refereed Journal Articles:

Cooperative Multi-Robot Control for Target Tracking with Onboard Sensing Nov. 2015
Karol Hausman, Joerg Mueller, Abishek Hariharan, Nora Ayanian, Gaurav Sukhatme.
The International Journal of Robotics Research (IJRR)

Refereed Workshop Papers:

Cooperative Multi-Robot Control for Target Tracking with Efficient Switching of Onboard Sensing Topologies Sep. 2014
Karol Hausman, Joerg Mueller, Abishek Hariharan, Nora Ayanian, Gaurav S. Sukhatme.
IROS Workshop on Taxonomies of Interconnected Systems: Topology in Distributed Robotics.

Refereed Conference Papers:

Cooperative Control for Target Tracking with Onboard Sensing Jun. 2014
Karol Hausman, Joerg Mueller, Abishek Hariharan, Nora Ayanian, Gaurav S. Sukhatme.
14th International Symposium Experimental Robotics (ISER), Marrakech / Essaouira, Morocco.

Projects

Humanoid Robot Kinematics May. 2014
Arm and leg motions using minimum jerk splines and inverse kinematics for the Aldebaran NAO robot.

Multi Robot Path Planning - A Quadcopter Implementation. May. 2014
Relaxed multi robot path planning problem for quad copters using proprioceptive sensing for energy optimization.

Graph-Based Planner AI for Checkers Game 2013
Java based graphical planner for two-player game of checkers.
Improved performance by reducing dimensionality of problem space using pruning and heuristics.

A Neural Network Approach for Complex Cognition & Planning in Adversarial Environments 2013
Modeling of pathological effects observed in subjects affected by Alzheimer's disease using a neural network planner under the conditions of degeneration and synaptic weight disturbance.

UAV (Unmanned Aerial Vehicle)-Project Leader and Developer. 2010
Implemented an array of sensors - accelerometers, gyroscopes, pressure sensors coupled with HIL simulation towards achieving autonomous waypoint following.