Abishek Hariharan

✆ *+1-424-533-9009 | US Work Authorization: H1-B*
linkedin.com/in/abishekh | github.com/abishekh | ahariharan@me.com

Professional Experience

Robotics Software Engineer R&D, KUKA Robotics, Austin TX 2017 - Present
Architecture, design and development of cloud based simulation pipeline, KUKA- Compose.
Active ownership and development of Physics, Motion Planning, Kinematics and Scene Graph modules.
C/C++, Protocol Buffers, GRPC, ROS, Kubernetes, Docker

Senior Engineer, Robotics R&D + Firmware, Soloshot Inc. 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 Internship, at Skycatch Inc. 2015
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

Academic Professional Experience

Research Assistant, USC Interaction Lab 2015
Android application to enable human robot interaction to model empathy for reducing anxiety in hospitalized children.

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.

Teaching Experience

Course Producer, USC - Viterbi School of Engineering 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 2013
Lecture series on image processing and computer hardware at the middle school level.

Education

University of Southern California, Los Angeles 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 2011
Bachelor of Engineering, Computer Science/Artificial Intelligence
Graduated First Class with Distinction

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, Kubernetes, Docker, Moveit 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 KUKA Agilus Family, IIWA LBR

Projects

Humanoid Robot Kinematics 2014

Arm and leg motions using minimum jerk splines and inverse kinematics for the Aldebaran NAO robot.

Multi Robot Path Planning - A Quadcopter Implementation. 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.

Publications

Refereed Journal Articles:

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