Dhruv Mauria Saxena

Contact Information

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Research Interests

Robot Learning, Planning, and Control

Education

Robotics Institute, Carnegie Mellon University, Pittsburgh, PA

M.S., Robotics **Aug 2015 – present**

- GPA: 4.17/4.00
- Coursework: Math Fundamentals for Robotics; Machine Learning; Kinematics, Dynamic Systems and Control; Computer Vision; Statistical Techniques for Robotics; Planning, Execution, and Learning

Experience

BIRD MURI, Robotics Institute, Carnegie Mellon University, Pittsburgh, PA

Graduate Research Assistant **Sep 2015 – present**

Master's thesis research advised by Prof. Martial Hebert. My work is focused on improving the planning and controls - including introducing a notion of hysteresis in path planning, learning failure recovery maneuvers, and combining reactive & deliberative control strategies using reinforcement learning and domain adaptation (*in progress*).

HCMI Lab, Brigham Young University, Provo, UT

Research Associate **Jun 2014 – Aug 2014**

Advised by Prof. Michael A. Goodrich, the goal of the project was to utilize human-swarm interactions to increase the efficiency of a robot swarm tracking a pollutant (in a fluid). Simulations used Navier-Stokes fluid dynamics, and a collective memory based swarm model.

Unmanned Aerial Systems - Delhi Technological University, New Delhi, India

Software Developer, Autopilot Systems **Oct 2011 – Mar 2014**

Performed hardware-in-the-loop and software-in-the-loop autopilot simulations, and worked on autopilot tuning, path planning, and overall systems integration for the AUVSI Student UAS Competition. Certified for Next-Generation Urban UAV development by Lockheed Martin Aeronautics.

Center for Forensic Computing, Cranfield University, Shrivenham, England

Visiting Research Student **Jun 2013 – Aug 2013**

Studied the significance of Raspberry Pi in digital forensics. Designed and carried out an experimental plan to establish the potential forensic artefacts recoverable from a Raspberry Pi device.

baseClass Automation, Budapest, Hungary

Software Developer **Jun 2012 – Aug 2012**

Designed and developed a remote desktop application to manage, program, and control industrial robot arms from other computers over an ethernet or Wi-Fi connection. The software has since been successfully launched as a commercial product.

Publications

D. M. Saxena, V. Kurtz, & M. Hebert, "Learning Robust Failure Response for Autonomous Vision Based Flight", submitted to *2017 IEEE International Conference on Robotics and Automation (ICRA)*.

Technical Skills

Programming Languages:	C/C++, Python, MATLAB, LaTeX
Tools & Libraries:	ROS, OpenCV, Caffe
Harware Platforms:	Piccollo II, ArduPilot (*Autopilots*); Odroid XU4, PandaBoard, BeagleBoard, Raspberry Pi, Arduino (*Single-board Computers*)
Operating Systems:	Windows, Linux, Mac

Extra-Curriculars

Senior RoboBanker, RoboOrg (student organization of the Robotics Institute at CMU).
Summer Scholar Mentor, Robotics Institute Summer Scholars (RISS) Program 2016.