Paresh Bhambhani

Contact Information

ARM LAB
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Research Interests

Multi-Agent Systems, Flocking and aggregation, Swarm algorithms, Multi-agent exploration, Graph theoretic methods in multi-agent systems.

Education

Colorado State University

Ph.D. Candidate, Electrical and Computer Engineering

- Research Area: Multi-Agent systems
- Advisor: Anthony Maciejewski

Colorado State University

Masters in Electrical and Computer Engineering

- GPA: 3.77

RCOEM, Nagpur University

B.E. in Electronics Engineering, June 2010

- GPA: 3.7

Graduate Coursework

- ❑ Robot Motion Planning
- ❑ Topics in Robotics
- ❑ Machine Learning
- ❑ Numerical Analysis I
- ❑ Non-Linear Controls
- ❑ Linear Algebra
- ❑ Fundamentals of Robot Mechanics and Controls
- ❑ Optimization Methods - Control and Communication
- ❑ Application of Random Processes
- ❑ Overview of System Engineering Processes
- ❑ Computer Organization and Architecture
- ❑ Ethical Conduct of Research

Computing Skills

- Languages and Packages: Matlab scripting, Python, C/C++, Latex, V+, ROS, limited exposure to Perl
- Algorithms: experience programming/evaluating/debugging Swarm behavior algorithms and robot motion planning, Robot localization and mapping, Bayesian Filters(KF,EKF,Particle)
- Hardware and Platforms: Adept MV-One Robots, Marvell PXA and Harman Development Platforms, limited exposure to BeagleBone Black and Reaspberry Pi
- Operating Systems: Unix/Linux, Windows

Academic Experience

Colorado State University

PhD candidate December, 2015 - present

- Current Research focuses on development of multi-agent/swarm system models for collective group tasks such as flocking, obstacle avoidance and collective exploration.
- Use of graph theoretic methods for consensus and group objective achievement.

Graduate Teaching Assistant July, 2014 - present

- Teaching Assistant with Systems Engineering Dept. for ENGR 501 and Mech 501.

- Grading Student Assignments, projects and presentations.
- Preparing Lecture Slides and Homework.
- Address students' administrative and coursework related questions.

Graduate Projects

- Creation of Swarm flocking framework based on the works of Olfati et al.
- Creation of *Swarm Chemistry* framework based on the works of Sayama et al.
- Creating Task Level Dynamic controller for Puma 560 robot.
- Pick & Place, and obstacle avoidance program for Adept MV-One robot.
- Creation of C program to generate robot joint values, using inverse kinematics, for Puma 560 robot.
- Debugging and resolving issue of offset in null-space motion of Adept MV-One Robot.
- Comparing the performance of K-Means vs the Particle Swarm Optimization on digits and wine datasets.

Professional Experience

Marvell Semiconductors, Pune, India

SQA and Automation Engineer September, 2010 - December, 2013

- Qualified Marvell's Bluetooth-Wifi solution releases for a customer tablet on WHCK.
- Developed perl scripts for automation of protocol testing scenarios.
- Carried out Customer requirement analysis, development of test environment and test setup, and creation of test scenarios.
- Developed test plans and test cases for testing and validation of Bluetooth and Wifi protocols.
- Led a team of 5 people to carry out testing of Bluetooth and Wifi functionality for 4 customer projects.
- Independently worked on creating complete testing strategy, from requirement analysis to test setup and script creation, of HCI Audio architecture for BlueZ bluetooth stack on Linux.
- Created intranet website for Test-bed reservation.

Leadership Experience

- 'Team Lead' at Marvell Semiconductors for 4 projects leading a team of 5 members.
- Student President in 2010 and Student vice-president in 2009 of Electrolitz, Electronics Department student society, RCOEM Nagpur.
- Cofounder of Entrix, a Co-curricular and Academic program for students to provide them with technical education beyond classroom which is now in its 9 th year at RCOEM, Nagpur.
- Captain of Electronics Department debate team at RCOEM, Nagpur.

Honors and Awards

- Received Marvell's recognition award for resolving critical pre-launch product issues at client site at Suwon, South Korea.
- First Place in "Best English Article" in Aarohi-09, a national level competition at VNIT, Nagpur, India.
- Second place in "Reacto Drive" in Quark-08, a National level Competition at BITS, Goa, India.
- Awarded academic excellence certificate for the year 2007-2008.