

Pushkar Kolhe

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Education

Georgia Institute of Technology

Ph.D., Computer Science (Machine Learning in Robotics)
– Adviser: Dr. Henrik Christensen

Atlanta, GA
Aug. 2010 - present

Georgia Institute of Technology

M.S., Computer Science

Atlanta, GA
May. 2009

Mumbai University

B.E., Computer Engineering

Mumbai, India
May. 2007

Publications

1. Dynamic Pushing Strategies for Dynamically Stable Mobile Manipulators.
Pushkar Kolhe, Neil Dantam, Mike Stilman, *ICRA 2010*.
2. Using Simulation To Assess The Effectiveness of Pallet Stacking Methods.
S. Balakirsky, F. Proctor, T. Kramer, Pushkar Kolhe and Henrik Christensen, *SIMPAR 2010*.
3. The Motion Grammar for Physical Human-Robot Games.
Neil Dantam, Pushkar Kolhe and Mike Stilman, *ICRA 2011*.

Invited Talks

1. “Planning in Logistics.” Pushkar Kolhe and Henrik Christensen, *PerMIS 2010*.

Work Experience

Georgia Institute of Technology

Research Scientist

– Cloud computing for distributed randomized algorithms.

Atlanta, GA
July 2009 -

Toyota Research Institute

Technical Research Intern

– Research in vehicle/people detection systems using velodyne and ladybug sensors.

Ann Arbor, MI
Aug. 2008 - Dec. 2008

Research Projects

Planning in Logistics

– Planning systems for automated warehouses. Optimization in large scale stochastic integer programming problems.

Fall 2010 -

Sparky, prototype humanoid robot

– Designed a non-holonomic two-wheeled balancing manipulator robot.
– Developed strategies for using robot dynamics for nonprehensile manipulation.

Spring 2009 - Summer 2009

Robocup Nao League 2008

– Participated in the humanoid robosoccer league in Suzhou, China 2008 with GT and CMU team.

Fall 2007 - Summer 2008

- Developed the perception and localization system on the Nao robot.
- Designed and developed multi-robot communication protocol for team strategy in robots.

Mobile Manipulation

Spring 2008

- Worked on a mobile manipulator platform of Segway and the KUKA LWM for picking up a CD and playing it in a CD player.
- Designed a perception system for detecting and tracking CD and the CD player.

Multi-robot Systems

Spring 2008

- Developed a communication model for multi-robot systems with which a goal task can be achieved by a multiple robot systems in groups. The protocol was designed specially to consider robots with limited or faulty sensors.

Open Source Projects

OpenCV

- Hybrid Tracking and a new framework for tracking as a part of the Google Summer of Code in Summer 2011.

USARSim/MOAST

- Open source development of the Unreal Engine based USARSim simulator and control system MOAST for simulating a manufacturing environment to test logistics.

IPC Real Time Control Architecture

- Development of a control architecture that utilizes IPC and real time functionality of the Linux kernel for controlling the robot Krang at the humanoids lab at Georgia Tech.

Awards

Second Position in AAI Small Scale Manipulation Challenge.	2010
Second Position in Robocup Nao League 2008.	2008
Third position in national level of the ABU Robocon competition.	2007
Third prize for best project exhibited at International Exhibition of IEEMA, Elecrama.	2006

Skills

Languages: C, C++, VC++, C#, Python

Embedded Systems: Atmel AVR, Xilinx XC9536 CPLD.

Robots: P3AT, iRobot Create, TRI iBot, CRS A465, Kuka LWM, Segway RMP 200, NAO
Designed inhouse: Prithvi2, Sparky, Golem Krang

Speedcubing

Other

Submitted an entry to Last call for Google App I/O for predicting traffic accidents on Google Maps by modeling the problem as a stochastic process.

References

Dr. Henrik Christensen

Distinguished Professor
Georgia Institute of Technology
Atlanta, GA, USA

[Web](#)

Dr. Mike Stilman

Assistant Professor
Georgia Institute of Technology
Atlanta, GA, USA

[Web](#)