

ADVAIT JAIN

Citizenship: Indian
Website: <http://www.cc.gatech.edu/~advait>

Email: advait@cc.gatech.edu
Mobile: 404.602.2447

EDUCATION

Georgia Institute of Technology Atlanta, GA, USA
PhD in Robotics, GPA 3.88/4.0 Aug '07 – Aug '12 (expected)
Advisor – Prof. Charles C. Kemp
Specialization – Mechanics, Perception, AI and Machine Learning

Indian Institute of Technology (IIT) Delhi New Delhi, India
Bachelor of Technology, Computer Science and Engineering, GPA 9.28/10 Aug '03 – May '07

SELECTED PUBLICATIONS (Complete list and videos on website)

Journals

- “Manipulation in Clutter with Whole-Arm Tactile Sensing” [A. Jain](#), M.D. Killpack, A. Edsinger and C.C. Kemp, *Under Review, 2011.* ([pdf](#))
- “Improving Robot Manipulation with Haptic Data from Humans and Robots” [A. Jain](#) and C.C. Kemp, *Under Review, 2011.* ([pdf](#))
- “EL-E: An Assistive Mobile Manipulator that Autonomously Fetches Objects from Flat Surfaces.” [A. Jain](#) and C.C. Kemp, *Autonomous Robots, 2009.* ([pdf](#))

Conferences

- “The Complex Structure of Simple Devices: A Survey of Trajectories and Forces that Open Doors and Drawers.” [A. Jain](#), H. Nguyen, M. Rath, J. Okerman and C.C. Kemp. *BIOROB, 2010.* ([pdf](#))
- “Pulling Open Doors and Drawers: Coordinating an Omni-directional Base and a Compliant Arm with Equilibrium Point Control.” [A. Jain](#) and C.C. Kemp. *ICRA, 2010. Finalist, KUKA Service Robotics Best Paper Award.* 36 of 2034 submitted papers were nominated for awards (1.77%) ([pdf](#))

AWARDS

- **Technological Innovation: Generating Economic Results (TI:GER) Fellowship**, College of Management, Georgia Tech. I lead a team of four MBA and law students as we investigate business ideas for in-home applications for general and special purpose mobile manipulators. (2010 – 2012)
- **Best undergraduate research project** in Computer Science and Engineering, IIT Delhi (2007)
- **All India Rank 24** (out of 200,000 students), IIT Joint Entrance Examination (2003)

ROBOTS (that I have worked on and assembled in the Healthcare Robotics Lab, Georgia Tech)

Cody Feb '09 – Present
I was one of the two PhD students who assembled Cody using off-the-shelf components (arms from Meka Robotics, a Segway omnidirectional mobile base etc.), and some custom parts. This included designing and building the power system, and mounting sensors that form Cody’s head. I have written most of the software infrastructure on Cody, serve as the system administrator, write and maintain documentation for the software and hardware, and ensure that the robot is up and running.

Willow Garage PR2 Jul '10 – Jan '11
I used the PR2 for my research on door opening. I continue to serve as the Georgia Tech PR2 safety officer and assist with occasional robot maintenance and repairs.

EL-E Sep '07 – Mar '09
EL-E was the first mobile manipulator that we (five PhD students and our advisor) assembled. I built a carriage on which we mounted a Katana arm, custom fingers with ATI Nano force/torque sensors at their base, and a point cloud capture rig using a Hokuyo mounted on a Robotis servo. Additionally, I was a major contributor to the software infrastructure.

SKILLS

Programming:

Robot Operating System (ROS), Python, C/C++, Matlab, Bash, VHDL
AVR and PIC microcontrollers, FPGAs.

Engineering:

CAD (Solidworks), PCB design tools (Eagle), rapid prototyping with duct tape, 80/20, laser cutters, 3D printers, soldering, drilling, and machining.

WORK EXPERIENCE

Healthcare Robotics Lab, Georgia Tech, GA, USA

Aug '07 – present

My research focus is on autonomous control of robots with compliant actuation at the joints using force and tactile feedback. I am biased towards building demonstrations of integrated systems that work on real robot hardware. Additionally,

- I am an active contributor to Georgia Tech's [open source ROS repository](#).
- I started our lab's [public wiki for open hardware](#).
- I co-manage our lab's 3D printer, laser cutter, and electrical and machine shops.
- I assisted with writing the grant proposal and am the lead PhD student for DARPA M3 contract W911NF-11-1-603. I play an active role in ensuring that we continue to meet the requirements of our funding agency, and in managing the collaboration between Georgia Tech and Meka Robotics.

Willow Garage Inc, Menlo Park, CA, USA

Jun '08 – Aug '08

As a summer intern, I helped define a robot description format and participated in the development of a physics-based simulation environment. I developed one of the first demos, in simulation, of the PR2 autonomously grasping a cuboidal object from a table.

Pravak Cybernetics (P) Ltd., New Delhi, India

Jan '06 – May '06

As an intern, I worked on analog design (interfacing thermocouples to instrumentation amplifiers), implemented PID controllers to maintain temperatures of the heat sources, and user software for a custom thermal conductivity measuring apparatus.

Visesh Infotech, New Delhi, India

Mar '05 – Jul '05

As an intern, I implemented a dialer to negotiate a PPP connection and a UDP/IP stack on an AVR microcontroller. My implementation was part of a vehicle tracking system that used the GPRS network to stream GPS coordinates to a web server to track the vehicle's position in real time.

SELECTED GRADUATE COURSES

Algorithmic Mechanics, Dynamics of Mechanical Systems

Computer Vision, Machine Learning, Pattern Recognition

Nonlinear Control Systems

Technology Commercialization (three semesters)

Analog Electronic Circuits (advanced undergraduate course)

PROFESSIONAL ACTIVITIES

Reviewer for the International Journal of Robotics Research (2011), ICRA (2010, 2011, 2012), IROS (2010, 2011)

HOBBIES

I enjoy reading, cooking, hiking, and swimming.
