

# ABHIJIT MAKHAL

1051, South 4th ave, Apt 21, Pocatello, ID, 83201 · makhabhi@isu.edu · (208) 380-8366 ·  
github.com/jontromanab

## EDUCATION

---

Idaho State University	Pocatello, Idaho
<b>PhD Measurement and Control Engineering</b> (GPA: 3.4/4.0)	Grad: December 2017
Indian Institute of Information Technology	Allahabad, India
<b>Masters Computer Science</b> (GPA: 9.8/10.0)	Grad: May 2010
Bengal Institute of Technology & Management	Kolkata, India
<b>BTech Electronics and Communication Engineering</b> (GPA: 9.6/10.0)	Grad: May 2007

## EXPERIENCE

---

**Human Centered Robotics Lab, University Of Washington** Seattle, WA  
*Research Scientist (supervisors: Maya Cakmak, Siddhartha S. Srinivasa)* June, 2017 — October, 2017

- Whole body control of mobile manipulators (Fetch, PR2)
- Motion planning for large surface cleaning by arm, torso and base
- Interface for controlling ROS-controlled robot by OpenRave

**Institut de Robòtica i Informàtica industrial: IRI** Barcelona, Spain  
*Visiting Research Scientist (supervisor: Fredrico Thomas)* April, 2017 — May, 2017

- Grasp execution of superquadric fitting on WAM arms

**ROS-Industrial (Google Summer of Code)** Home  
*Research Internship (supervisor: Alex K. Goins)* May, 2016 — August, 2016

- Reachability map generation of any redundant or non-redundant robotic arm
- Base placement techniques by reachability map inversion
- Validation of base placement theories on real robot and simulation

**Idaho State University** Pocatello, Idaho  
*PhD Student (supervisor: Alba Perez Gracia)* August, 2013 — Present

- Superquadric fitting and pose estimation of unknown objects from point cloud data
- Mirroring techniques to approximate occluded regions from single view point cloud
- Novel online grasping algorithms for superquadrics
- Grasp execution of unknown objects in isolation or cluttered scenario

## SKILLS

---

Programming:	C, C++, Python, Matlab, Mathematica
Software Tools:	ROS, PCL, OpenCV, OpenRAVE, MoveIT, OMPL, GraspIT, Tensorflow
Robotic Hardware:	PR2, Fetch, WAM, UR5, Barrett, Robotiq, Nao, Turtlebot, HOAP2, Biloid
Robotic Simulator:	Gazebo, V-Rep, Webot
Operating Systems:	Ubuntu, Windows

## PROJECTS

---

**Superquadric Grasping** C++, ROS, PCL, MoveIT <https://github.com/jontromanab/sq-grasp>  
A package to grasp unknown objects by superquadric fitting

**Reuleaux** C++, ROS, IkFast, KDL, MoveIT <http://wiki.ros.org/reuleaux>  
A package for robot reachability analysis and base placement

**FetchPy** Python, ROS, OpenRave, Gazebo <https://github.com/jontromanab/fetchpy>  
A package to control Fetch Robot from OpenRave