

# Nandan Banerjee

## Résumé

### OBJECTIVE

To work on state of the art robots, devise new algorithms related to controls, vision and motion planning, and become a reputed roboticist.

### WORK EXPERIENCE

JUNE 2015 – PRESENT

iRobot Corporation  
Bedford, MA, USA

#### Robotics Software Engineer

Development of state of the art algorithms for robotic manipulation, vision, and navigation in the R&D division.

JUNE 2014 – AUGUST 2014

Vecna Technologies  
Cambridge Research Lab, USA

#### Robotics Research Intern

Porting Vecna's Robotics suite from ROS Fuerte to Hydro. Model based tracking algorithm implementation to track the hand of a Kinova JACO arm. Implementation of a Calibration Helper tool to partially automate generating camera-robot transforms.

JULY 2012 – JULY 2013

Samsung Research India  
Bangalore, INDIA

#### Software Engineer

Interfaced parts of the Tracfone prepaid engine for a Samsung feature phone. Implemented AT commands for AT&T feature phones. Debugged file system, SD card, USB and other system layer issues related to ST Ericsson's ARM9 processor.

JUNE 2011 – AUGUST 2011

Variable Energy Cyclotron Centre  
Calcutta, INDIA

#### Summer intern

Performed a comparative study of parallel computing techniques using NVIDIA CUDA and OpenMPI on histogram computation at the LHC Grid computing laboratory.

### PUBLICATIONS

- 2015 **Human Supervised Control of the ATLAS Humanoid Robot for Traversing Doors**  
*15th IEEE RAS Humanoids Conference*
- 2015 **NO FALLS, NO RESETS: Reliable Humanoid Behavior in the DARPA Robotics Challenge**  
*15th IEEE RAS Humanoids Conference*
- 2017 **Team WPI-CMU: Achieving Reliable Humanoid Behavior in the DARPA Robotics Challenge**  
*Journal of Field Robotics*
- 2017 **Heuristically initialized motion planning in a low cost consumer robot**  
*17th IEEE RAS Humanoids Conference*

### SKILLS

LANGUAGES	C, C++, Python, Java, Object Pascal
APIS	ROS, OpenCV, PCL, MoveIt, FCL, OpenGL, Android SDK, CUDA
OS	Windows, Linux
SOFTWARE	Matlab, Visual Studio, $\LaTeX$ , GDB, Git, SVN
EMBEDDED	AVR & ARM microcontrollers, Circuit design & simulation

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### EDUCATION

- 2013 – 2015 **Robotics Engineering**  
MASTER OF SCIENCE  
*Worcester Polytechnic Institute*
- 2008 – 2012 **Computer Science**  
BACHELOR OF TECHNOLOGY  
*National Institute of Technology, Durgapur*

### SIGNIFICANT PROJECTS

- 2014 **DARPA Robotics Challenge (Robot Dynamics, Robot Control, Perception)**  
*Programming perception and manipulation capabilities for the ATLAS robot. Simulating Inverse Kinematics for Atlas' arms, visual servoing, trajectory optimization, object segmentation, walking. I am the team lead for the door task, where the robot has to go, open and walk through a generic door. For more details, visit <http://robot.wpi.edu/drc>*
- 2013 **Visibility Planning (Robot Kinematics, AI, Optimization)**  
*Plan for visibility of an object by the robot hand camera using Simulated Annealing on the Baxter research robot.*
- 2011 **Chess Playing Robot (Control Systems, Computer Vision)**  
*4 DOF manipulator capable of playing chess in real time. Uses the GNU Chess Engine to determine the computer moves and a webcam to determine the moves made by the opponent.*
- 2010 **ABU-ROBOCON Competition 2011 (Control, Programming, Circuit design, Sensors)**  
*As a senior member of the institute's ROBOCON team, I spearheaded the automation division of our team. I designed and implemented the control systems and managed the junior members.*
- 2009 **Perpendicular Parking Robot (Sensors, AVR microcontroller)**  
*Small robot car which is able to autonomously park itself perpendicularly after finding a desired parking spot.*

### EXTRA-CURRICULAR ACTIVITIES

- ROBOTICS Won prizes in Robotics & Embedded systems competitions
- QUIZZING Represented NIT Durgapur and Samsung at various competitions
- STEM STEM talk at schools and job shadows

### MORE INFORMATION

- WEBSITE For more information regarding the projects above and other ones, please visit - <http://www.nandanbanerjee.com/projects>
- ORGANIZATIONS IEEE, IEEE-RAS
- LANGUAGES English, Bengali, Hindi