

Nandan Banerjee

Résumé

OBJECTIVE

To work on state of the art robots, devise new algorithms related to SLAM, vision, and other robotics problems.

WORK EXPERIENCE

JUNE 2015 – PRESENT

iRobot Corporation
Bedford, MA, USA

Sr. Robotics Software Engineer

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

JUNE 2014 – AUGUST 2014

Vecna Technologies
Cambridge, MA, USA

Robotics Research Intern

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
Kolkata, 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.

SELECTED PUBLICATIONS

- 2018 **Fast Nonlinear Approximation of Pose Graph Node Marginalization**
ICRA 2018
- 2019 **Lifelong Mapping using Adaptive Local Maps**
ECMR 2019
- 2019 **View management for lifelong visual maps**
IROS 2019
- 2021 **Preventing and Correcting Mistakes in Lifelong Mapping**
ECMR 2021

SKILLS

LANGUAGES	C, C++, Python, (past - Java, Object Pascal)
APIS	OpenCV, OpenGL, (past - ROS, PCL, MoveIt, Android SDK, CUDA)
OS	Linux, Windows
SOFTWARE	Matlab, Visual Studio, \LaTeX , GDB, Git, SVN
EMBEDDED	(past - AVR & ARM MCUs, 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

- 2018 **Persistent Maps on Roomba (SLAM, Computer Vision, Occupancy Mapping)**
Mapping and navigation research - algorithms for vision front end, occupancy mapping, SLAM-graph optimization and sparsification in heavily constrained computational platforms to enable lifelong mapping for next generation Roombas (i7) and other consumer robots.
- 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.

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 (Senior Member), IEEE-RAS
- AWARDS iRobot Chairman's Team Award 2018, IRNet Young Investigator Award 2012
- LANGUAGES English, Bengali, Hindi