Nithin Murali
Curriculum Vitae

Awards and Honors

- ○ Awarded **Institute Special Mention** (Technical), for outstanding contribution towards Robotics and Technical activities on campus , 2015
- ○ Awarded **Best Research Award** (1 out of 150) for Institute Technical Summer Project

Professional Experience

Google Summer Of Code student   [summer 2015]

Mentor : Luis J Manso , Marco

- ○ Worked on restructuring the building and deployment system of Robocomp
- ○ Designed and implemented a workspace environment for Robocomp
- ○ Developed tools for various tasks including building multiple components without breaking dependencies, run tests, inspect source tree
- ○ Packaged Robocomp and supporting components for personal package archive

Open Source

- ○ Contributor of the Firefox browser and related mozilla tools
- ○ Active contributor of Robocomp - a component based robotic architecture

Major Technical Projects

AUVSI foundation organised US office of Naval Research   [autumn 2014 - present]
International Robosub competition San Diego, CA   *Guide:Prof. Leena Vachhani*

Designing and developing an unmanned Autonomous Underwater Vehicle (AUV) that localizes itself and performs realistic missions based on feedback from visual, inertial, acoustic and depth sensors   Project Budget: **7 million** INR

Head, Image Processing & Machine Learning

- ○ Segregated vision architecture into different layers improving modularity and scalability
- ○ Implemented a object tracker which predicts and tracks object position based on motion history
- ○ Implemented **motion compensated filtering** to remove sunlight in shallow images

Achievement : semifinalist RoboSub 2015 , notable improvement in 50% of tasks

Refreshable Braille display   [summer 2014]
Finalist Intel Embedded India challenge 2014   *Mentor : S. Karthikeyan*

- ○ Designed and developed a working prototype of Refreshable Braille Display which could read from both hard and e-books & produce audio and tactile output
- ○ Developed first of its kind innovative actuators using electro-permanent magnet
- ○ Developed on Raspberry-PI, Intel Galileo board and Atmel's microcontrollers
- ○ Finalist *(top 10 out of 2000 teams)* across the country

Humeur - Emotion Recognition [Summer 2015-present]
- Developing an emotion detection system, extracting 68 different facial landmarks
- Convolutional Neural-Nets and **Support Vector Machine** as classification tools

Parinath - Humanoid Robot [spring 2013]
Guide : Ashay Tejwani
- Worked in the AI division of Parinath, exploring various machine learning algorithms
- implemented **backpropagation**, k-NN, 3 layer neural networks

Robin- Platform Game [spring 2013]
Guide :   Prof-Supratim biswas (course project)
- Designed and coded a platform game and its level editor purely in c++
- Designing involved heavy utilization of OOP concepts
- Used SDL 2.0 library for rendering Graphics

Web Projects
- Designed and coded IIT Bombay Dramatics club website
- Designed and coded Hostel 15 - IITB website from scratch

Positions of Responsibilities

Convener WnCC [2014 - 2015]
Web and Coding Club - One of the largest clubs in IITB
- Organized multiple talks, hackathons and competitions
- Participate in competitions representing IIT Bombay

Co-ordinator Techfest IIT Bombay [2014 - 2015]
- Developed a Virtual Betting Android app for Robowars
- Contributed to techfest website, mainly backend
- Managed Logistics for swarm robotics workshop

Tech Councilor [2013 - 2014]
Hostel 15-B IIT Bombay
- Leading a team of 9 tech representatives, vision of promoting tech activities in the hostel
- Conducted various competitions and workshops
- Designed coded and maintained hostel website

Technical Mentor [summer 2015]
Institute Technical Summer Projects (ITSP)
- Guided and mentored a team for doing summer technical project
- Guided on converting a prototype to product with intricacies and aesthetics

Miscellaneous Projects / Activities
- Won *Best Technical Bot* award for the wireless tank developed in XLR8 competition
- Made an *completely autonomous line following* vehicle
- Made an Ball throwing robot which could throw balls at different ranges and angles
- Successfully completed volleyball camp under National Sports Organisation
- 4th in Intra-college technical general championship for developing automatic bicycle parking

Technical Skills
- **Programming skills :** Advanced C/C++, python (including some Django) , rust, javascript, Sql, php, bash, java, android, cmake, assembly, Verilog, html, css, ajax
- **Development Boards/ Microcontrollers :** Beaglebone, Raspberry-pi, Intel Galileo, 8051