

NANDA KISHORE VASUDEVAN

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EDUCATION

National Institute of Technology, Trichy

May '14 - July '18

Bachelor of Technology (Electrical and Electronics Engineering), 7th semester

CGPA: **9.74/10** (till date), 1st rank in class.

TI Matriculation Higher Secondary school

June '12 - May '14

Class XII (Physics, Chemistry, Mathematics, Computer Science, English, and French)

Percentage: **98.67%**, 1st rank in school.

RESEARCH INTERESTS

- Mobile Robotics
- Perception and Navigation
- Robot Control
- Multi-Robot Systems
- Artificial Intelligence

INTERSHIPS

LightWriting with Crazyswarm

May '17 - July '17

Viterbi-India Summer Research Program

Mentor: **Dr. Nora Ayanian**, Assistant Professor, University of Southern California

Institute: Viterbi School of Engineering, University of Southern California, Los Angeles

- Developed an algorithm to autonomously perform **light painting of text** (text written using light captured by long exposure photograph) by a **swarm of Crazyflie 2.0 quadcopters**.
- Generated trajectories for the swarm of quadcopters using the **Crazyswarm** codebase with *VICON* motion capture system for localization.

Strategy for Evader in Pursuit Evasion using Reinforcement Learning

May '16 - July '16

Science Academies' Summer Research Fellowship

Mentor: **Prof. Aparajita Ojha**, Former Director, IIITDM Jabalpur

Institute: Indian Institute of Information Technology D&M, Jabalpur

- Implemented **Q-learning coupled with neural network** in keras for the evader in grid-based pursuit evasion games.
- Obtained a success rate of 92.4%¹ for the evader in simulations.

RESEARCH

Exploring Unmapped Terrain with a Multi-Robot System

July '17 - Ongoing

Undergraduate Researcher

Mentor: **Prof. Sankaranarayanan V**, Associate Professor, NIT-Trichy

Institute: National Institute of Technology, Trichy

- Implemented **optimized random algorithm** on a ROS platform for LEGO EV3 differential drive robots to disperse them in the terrain.
- **Planned paths** for the other robots to reach the goal after one of the robots identifies the goal.

¹Link to the report submitted to Indian Academy of Sciences.

PROJECTS

Soccer robots

July '16 - Ongoing

- Designed and fabricated four soccer playing robots in compliance with the **RoboCup Small Size League rules**.
- Controlled the omnidirectional robots from a **central master** incorporating feedback from **overhead cameras**.

Sound source Localizing All Terrain Hexapod

Nov '15 - Feb '16

- Developed a **six-legged, all-terrain, disaster management robot** inspired from R-HEX developed by Boston Dynamics.
- Developed algorithms to enable the robot to perform **sound source localization, walking, stair climbing, ramp climbing and inverted operation** (ability to operate even when inverted).

Mobile Robotics Development Platform

Sept '15 - Feb '16

- Developed a robotics research and development platform based on **ROS, Kinect, Rotary Encoders and IMU** (Inertial Measurement Unit).
- Endowed with the ability to map the environment (2-D mapping), localize itself in the map and navigate in the environment (**Simultaneous Localization and Mapping**).

TECHNICAL STRENGTHS

Programming Languages	C, C++, Python, MATLAB, JavaScript, PHP, Shell scripting, L ^A T _E X
Libraries	ROS, OpenCV, Keras
Softwares	Gazebo, Git, Simulink, TINA, PSpice
Hardware	Crazyflie 2.0, VICON, LEGO EV3 and NXT, Arduino and TI boards

ACADEMIC ACHIEVEMENTS

- One of the 20 students selected from India for **Viterbi-India Summer Research Program 2017**² sponsored by USC Viterbi School of Engineering and Indo-US Science and Technology Forum.
- Selected for **DAAD-WISE**³ scholarship 2017.
- Recipient of **Science Academies Summer Research Fellowship**⁴, 2016.
- Recipient of **S J Chainulu Medal of Excellence** during institute day 2016 for securing **1st rank** in the department in the first year.
- Felicitated for securing overall **3rd rank** across departments in the first year during institute day 2016.

CO-CURRICULAR AND EXTRACURRICULAR ACTIVITIES

- Core member of **RMI (Robotics and Machine Intelligence)**, the official robotics club of NIT-Trichy.
- **Treasurer, Electrical and Electronics Engineering Association** affiliated to the department of Electrical and Electronics Engineering, NIT-Trichy
- Awarded the **3rd position** in Sangam, the prestigious **innovation challenge**, organized during Pragyan 16 - the ISO certified Annual International Techno-Management Festival of NIT Trichy for the project "Sound source Localizing All Terrain Hexapod".
- Conducted **5 hands-on workshops** on the basics of robotics, image processing, and machine learning.

²Homepage of Viterbi-India Summer Research Program

³Homepage of DAAD-WISE scholarship

⁴Homepage of Science Academies Summer Research Fellowship Programme 2016