

Rajendra Singh

Fourth year
Computer Science and Engineering
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SUMMARY

◆ Domain	:	Artificial intelligence(AI) and Robotics
◆ Internships	:	UST Global, Researchshala and IIT Madras.
◆ Projects	:	SLAM, Swarm robotics, Manipulators
◆ Position	:	Former Head, Robotics club, IIT Palakkad
◆ Achievements	:	KVPY fellowship, AWES Scholarship
◆ About	:	Passionate about vision-based robotics, research oriented and looking forward to work with enthusiastic team in this domain.

EDUCATION

Program	Institution	%/CGPA	Year
• B. Tech	Indian Institute of Technology, Palakkad	7.19 (Till VI Semester)	2016 - April, 2020
• XII	Delhi Public School, Udaipur	89%	2015 - 16
• X	Delhi Rajasthan Public School, Rajsamand	96%	2013 - 14

TECHNICAL SKILLS

Title	Skills
► Robotics	<ul style="list-style-type: none">• SLAM(2D / 3D)• Motion and path planning• Swarm algorithms• Control system• Perception(Feature matching, Segmentation, Detection)• Sensor fusion(Kalman, Particle filter)• Robot kinematics and dynamics(DH/Newton/Euler/Lagrangian method)• Embedded system(ARM, RTOS, FPGA)
► Reinforcement Learning	Q-learning, Sarsa, Monte Carlo, TD, Multi-armed bandit, DQN, Genetic algorithm
► Deep Learning	CNN, RNN(LSTM, Seq2seq, etc.), Unstructured data, Topic modeling, Word embedding
► Languages	C++ , Python
► Software/Tools	ROS1/2, Moveit, Gazebo, V-REP, Matlab, Fusion 360, Keil, Atmel studio 6, OpenGL
► Hardware	Rplidar A2M8, RealSense D435, Nvidia Jetson(Tx2, nano), Raspi3B+, GstarIV GPS, Zybo-zyng FPGA, KL25Z arm cortex-M0+ , Atmega16/32/2560, NodeMCU, GSM, Pyboard, OpenMV, PlutoX

WORK EXPERIENCES

May-July, 2019	● Research intern, UST Global, Trivandrum Studied various SLAM algorithm and implemented it using ROS by fusing sensor data of lidar and 3d depth camera. Later, I worked on control and planning of robotics manipulator for vision based pick and place task.
May-July, 2018	● Data Science intern, Researchshala, Chandigarh Worked on NLP projects related to transfer learning, topic modelling, web and pdf scraping, extracting and analysing useful information from unstructured data.
May-June, 2017	● Vistaar Program, IIT Madras Studied state of art 3D printing technology and then built Prusa i3 3D printer and a robotic arm using this printer.

SEMINAR PRESENTATIONS

- Visual SLAM on [mobile manipulator](#) using ROS, Industry-Academia Conclave'19, IIT Palakkad
- Low cost 3D printer [Prusa-i3](#), Open House'17, Centre for Inovation([CFI](#)), IIT Madras

August, 2019
October, 2017

SELECTED PROJECTS

- Implemented [SLAM](#) on automated guided vehicle([AGV](#)) by sensor fusion of data from 2D lidar and 3D camera.
- Vision based [control](#) and trajectory [planning](#) of robotics manipulator in pointcloud data.
- Path planning of [Swarm of drone](#) for flying in synchronized manner, under Smart India Hackerthon 2019.
- Built [EOG](#) based typing system for individual with motor neuron diseases.
- Built automated [Toilet Cleaning Robot](#) for cleaning toilet seat and floor, Inter-IIT 2017-18, IIT Madras.
- Build model for [Satellite image classification](#) using just 14 images, for Inter-IIT 2018-19, IIT Bombay.

To know more about these projects, please visit: <https://iamrajee.github.io/projects/>

RELEVANT COURSES

Area	Courses
► Maths	Linear algebra, Probability, Stochastic Process and Statistics, Differential and Integral Calculus
► CS	Data Structures and Algorithms, DBMS, OS, Computer networks, Compilers, Parallel programming
► AI	Principle of machine learning, Deep learning, Reinforcement learning
► Robotics	Robotics manipulation and control, Embedded system, Signal and system, Engineering mechanics, Biomedical and Instrumentation

POSITION OF RESPONSIBILITY

- **Head of Robotics Club, IIT Palakkad** July 2018 - May 2019
 - Teach basics and advance concept of robotics.
 - Mentor student projects.
 - Encourage student to participate in regional and national competition.
 - Prepare and lead team in competitions.

SCHOLASTIC ACHIEVEMENTS

- ◆ Winner, Kaizen Robotics Competition, Lema labs. 2017
- ◆ Awarded Kishore Vaigyanik Protsahan Yojana(KVPY) Fellowship by DST, Govt. of India. 2016
- ◆ Qualified IIT-Jee Advanced 2016 with a percentile of 99.3 amongst a total of 1.2 million students. 2016
- ◆ Best Student of Year Award 2014–15, Rajsamand District Private Education Committee. 2015
- ◆ Awarded Merit Scholarship Class X, Army Welfare Education Society(AWES). 2014

REFERENCES

- | | | |
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| <ul style="list-style-type: none"> • Mr. Ashok Nair
Director Service Delivery,
UST Global, Thiruvananthapuram
E-Mail: ashok.nair@ust-global.com | <ul style="list-style-type: none"> • Mr. Shubham Jain
Founder and CEO,
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E-Mail: shubham@researchhala.com | <ul style="list-style-type: none"> • Dr. Piyush P. Kurur
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