Vaidehi Som

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Education

Indian Institute of Technology Jammu, India — Aug. 2017 – June 2021
Bachelor of Technology in Mechanical Engineering — *CGPA: 8.0/10*

K.L. International School, India — 2017
Higher Secondary School — *Percentage: 90.5%*

Technical Skills

Languages: Python, C++, MATLAB
Frameworks: ROS, Gazebo, RViz, PyTorch, Tensorflow
Libraries: Pandas, NumPy, Matplotlib, OpenCV, Sklearn, etc
Others: Deep Learning, Localization, Mapping and SLAM, Path planning and Navigation, Computer Vision

Projects

Robotic Arm | *Python, Kinematics, Control Systems* — March 2021 – June 2021
- Fabrication of Robotic Arm of 10 kgs from scratch *Video/Report*
- Programmed for forward and inverse kinematics, motor control, closed loop system
- Able to perform pick and place actions for payload of 2 kgs

Gesture Recognition System | *ROS, Gazebo, Python, Deep Learning, Computer Vision* — Sept 2020 – Nov 2020
- Detected hand landmarks using pose estimation algorithms obtaining accuracy of 87% *Video/Report*
- Key-points detected using Intel-RealSense Camera were used to define various gestures
- Simulated robotic arm using ROS and Gazebo to perform pick up tasks
- Gestures were employed to control simulated Robotic Arm, computer screen, and mouse

Mobile Robot: Simulation and SLAM | *ROS Navigation stack, C++, AMCL, EKF, Gazebo* May 2021 - June 2021
- Designing URDF model and arena *Video*
- Used gmapping for 2D and RTABMap for 3D mapping
- Localization using AMCL
- Deployed SLAM and Navigation using Dijkstra algorithm on our robot and simulated pick and place operation by synchronizing ROS parameters
- Simulation of Ball chasing robot, detection via colors

Combat Robot|*Drive and weapon motors, Motor controllers, Transmitters and receivers, ESC* Oct 2019 – Dec 2019
- Self-designed and fabricated the combat bot which in turn is capable of destroying other bots using its weapon mechanism consisting of a rotating drum *Video/Certificate*
- Lead the team of 6 members for participating in Robowars event at IIT Bombay's TechFest
- One of the 20 teams selected from all over India for the main event at IIT Bombay
- The bot was manufactured to battle with other bots in 15kgs category

Research: Biometric Transformation using Deep Learning | *Python, Computer Vision* — Feb 2021 – Present
- Aiming to transform human biometrics using Deep Learning
- Working on this paper along with my professor, Dr. Harkeerat Kaur

Experience

Research Intern | *Python, Deep Learning, GANs, Style Transfer* — July 2020 – August 2020
Dr. Harkeerat Kaur, IIT Jammu
- Generated numbers and fingerprints by applying the concept of Cycle-GANs
- Implemented Neural Style Transfer algorithm using VGG architecture
- Combined both algorithms to generate captchas and fingerprints

Research Intern | *Python, Deep Learning, End-to-End learning* — May 2019 – July 2019
Dr. Virendra Singh, IIT Bombay
- Developed deep learning model for self driving car based on behavioral cloning
- Collected data, trained, and tested vehicle using Udacity's unity based simulator
- Implemented end to end learning for self driving to keep the simulated car on track

Relevant Coursework

Undergraduate Coursework

Computer Vision, Machine Learning, Control Theory

Online courses

- **Robotics**: Robotics Software Engineer Nanodegree from Udacity, Robotics Specialisation from Coursera, Introduction to Mobile Robotics
- **Machine Learning**: Audited Stanford's CS 230-Deep learning. Completed Deep Learning specialisation from Coursera

Achievements

Bus Route Optimization | *Python, Constraint programming, OR Tools, Google Map API* Dec 2019

- Earned silver prize amongst all 20 participating IITs at national level *Certificate*
- Event of Inter-IIT Tech Meet'19 organized and judged by BOSCH

Prof. Sudhir K. Leadership Award | *Leadership award* April 2021

- Given to two students from the whole university on the basis of contributions made in leadership towards the university's student activity *Link*

Window Cleaning Robot | *Solidworks, EDF concept* Jan 2020

- Designed a novel model for window cleaning robot in Tech Fest, IIT Ropar using Solidworks. 3rd position out of 15 teams
- Used Electric Ducted fans(EDF), speed controller, IR/IMU sensors, Drivers, and Arduino Mega in design

Automated Traversing Robot | *Arduino* March 2019

- Secured 1st position in Technunctus- Inter college Tech Fest, IIT Jammu
- Built an arduino controlled bot. Using it as a prototype, studied driving pattern recognition using motion sensors

National Creativity Olympiad: AIR 6 2015

NTSE Stage-1 2012

Extracurricular

Position of Responsibility

- Career and Development Cell of IIT Jammu branch representative, 2018-2020
- Coordinator of Sponsorship team for the first Industrial Conclave of IIT Jammu, 2019 *Certificate*

Others

- Have interviewed prominent personalities in various fields, 2019-2021 *Blogs*
- Established Kritash, the social club of IIT Jammu which aims to mentor less privileged children, 2017-2018
- Lead the women's badminton team of IIT Jammu in Badminton in the Inter IIT Sports meet, 2018 held at IIT Guwahati *Certificate*
- Represented IIT Jammu in Chess in the Inter IIT Chess meet, 2017 held at IIT Madras *Certificate*