Shruti Sharma

Control Systems Engineer · Robotics Enthuthiast

39, Jaitpura, Jaipur, Rajasthan, India

(+91) 7734007718 | shruti12101997@gmail.com | shrutisharma1210/

"Life is too small to be sad."

Education

BITS Pilani — *Pilani Campus, India*

B.E. Hons. Manufacturing Engineering — *August 2016 - July (Exp.) 2020*

- Overall CGPA - 7.74
- Coursework: Robotics, Neural Networks and Fuzzy Logic, Image Processing, Machine Learning, Mechatronics and Automation, Control Systems, Reverse Engineering and Rapid Prototyping etc.

A.N. Public School, India — *Jaipur, India*

High School - Grade 12 — *August 2014-May 2015*

- Percentage - 95.8, first rank in school.

Skills

Programming Python, C++, MATLAB, RobotStudio, LaTeX

Softwares ROS, Gazebo, Solidworks, AutoCad, OpenScad, dSpace, MATLAb-Simulink

Languages English, Hindi

Experience

Festo AG & Co. KG — *Esslingen, Germany*

Bahelor Thesis : Model-Based Design and Control of a Pneumatic Robot Joint — *July 2019 - Dec 2019*

- Worked in Robotics system design with Dr Rainer Nitsche working towards the development of a 6-dof pneumatic cobot
- Developed & edited custom modular Simulink library blocks of pneumatic components built using C programming
- Developed and implemented a flatness-based position and pressure controller to control the nonlinear pneumatic drive model
- Implemented derived software model on an actual hardware configuration using dSPACE hardware system MicroAutoBox II

Hiroshima University — *Higashihiroshima, Japan*

Summer Intern & ILDP exchange Student, Supervisor: Dr Shin Wakitani, Control Systems Laboratory — *May 2018 - July 2018*

- Developed a PID, I-PD, and a fuzzy controller for a non-linear system in the presence of disturbances
- Designed a mathematical model and implemented a metal temperature control system for corroboration using HIL simulation.

Projects

Autonomous Robot Navigation using RL — *India*

Supervisor: Dr J.L. Raheja, CEERI Pilani — *Jan 2019 - May 2019*

- Developed an object detection algorithm using ROS-PCL for images from a synthetic data set developed using Kinect Studio
- Used reinforcement learning algorithm: dueling double deep Q network (D3QN) for navigating robot in a simulated environment

Design of a flexible light-weight manipulator arm for assembly — *India*

Supervisor: Prof B.K. Rout, CRIS — *August 2018 - Dec 2018*

- Dynamic and kinematic modelling of 2-DOF RR manipulator with joint flexibility, assumed equivalent to a torsional spring & rigid links.
- Developed a PID controller to eliminate the inaccuracy introduced due to compliance.

Unmanned Aerial Vehicles, BITS Pilani — *Pilani, India*

Design of a multi-copter with a manipulator arm, Supervisor: Prof Prateek Kala — *Sept 2018 - Nov 2018*

- Developed a teleoperated hexacopter with a 2-DOF manipulator arm
- Used Pixhawk as the flight controller which was tuned using Mission Planner

Rapid Prototyping, BITS Pilani — *India*

Slicing algorithm for 3-D printing — *March 2019 - April 2019*

- Developed a program in Matlab to generate CNC code for a 3-D printer using CAD files

Deep Learning, BITS Pilani

India

Recommendation System

March 2019 - May 2019

- Worked on a collaborative filtering based recommendation system using autoencoders with PyTorch

Position of Responsibility

Inspired Karters - Formula Student

India

Vehicle Dynamics Lead

Feb 2018 - Jan 2019

- Led Vehicle Dynamics of a 50 member student team
- Designed and manufactured the wheel assembly and suspension system for a Formula Style open-cockpit vehicle
- Raised 25,000 USD along with the sponsorship team for car's budget; raised 400 USD in a week to resolve a sudden engine problem
- Participated in Formula Bharat 2019; stood 4 in Cost Competition in around 70 participating team, and 17 overall nationally

Alumni Relations Cell, BITS Pilani

India

Founding member and Co-editor

Aug 2017 - Aug 2018

- Initiated and drafted quarterly Alumni Newsletter covering the recent Alumni news
- Organised and coordinated reunions comprising of alum batches from 1968 - 2000
- Implemented a strategy to update the old and scattered alumni database for getting connected with around 150,000 alumni network
- Developed an initial layout for the functioning for the cell in subsequent years; channelised funding of around one million USD

-

Scholarships

2018	**First Degree Project Funding**, Granted 28,000 INR for developing the multi-copter by Mechanical Engineering Department	*India*
2018	**SHRI S. VAISH MEMORIAL SCHOLARSHIP**, Received 2,22,250 INR via Vaish Foundation to pursue my summer internship at Hiroshima University	*India*
2019	**Mahendra Ram Dalmia Memorial Scholarship**, BITSAA scholarship, 25 per cent of my tuition fees were waived off, which is around 31,000 Indian rupees.	*India*
2019	**MCN Scholarship**, 40 per cent and 25 per cent of my tuition fees was waived off for second semester 2016-2017 and for last five semesters from 2017-2019	*India*

Extracurriculars

Writing

Profile link

Personal Blog

Sept 2018 - Present

- Drafts of conclusions and insights about randomly ever changing life