VIKRANT DEY

B.Tech. Electrical Engineering
UG(III Year I Semester)
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Registration No: B.Tech./EE/18118082/2021

Indian Institute of
Technology
Roorkee

Area of Interest

Deep Learning, Image Processing, NLP, Speech Recognition, Computer Vision, Electronics, IoT

Education

Year	Degree/Examination	Institution/Board	CGPA/Percentage
2020	B.Tech. 2nd Year	Indian Institute of Technology, Roorkee	*8.342*
2018	Twelfth	Ramanuj Gupta Junior College	*92.4 %*
2016	Tenth	Silchar Collegiate School	*96.2 %*

Internships

Summer Internship | CodeSpeedy Technology Private Limited 16 June 2020 - 30 July 2020

- Provided coding solutions to various problem statements in the technical industry.
- Machine Learning problem statements include Image to Image Translation using Conditional Generative Adversarial Networks, and Fingerprint Detection.
- Image Processing problem statements include Depth Map plotting and Depth Estimation from Stereo Images, and Document Field Detection using Template Matching.

Projects

AUVSI-SUAS Competition 2021, Maryland, USA | IIT Roorkee September 2019 - ongoing

- Fully autonomous hexacopter drone to deliver packages to customers by dismounting an autonomous ground vehicle.
- Used LiDAR sensors for avoiding static and dynamic obstacles.
- Communication with the ground station via telemetry and Ubiquiti channels to transmit and receive data from the interoperability server.
- The specific role was to design Deep Learning Algorithms to perform onboard object detection, localization, and classification of objects.

D.R.D.O. SASE UAV Fleet Challenge | Inter IIT Technical Meet 8.0 | IIT Roorkee October 2019 - December 2019

- Detection of green boxes on green grass through a swarm of three autonomous drones.
- A deep neural network robust for different backgrounds and illumination used for object detection.
- Connection between the drones established through WiFi and communication done via a cloud server provided by Google Firebase.
- Coordinates of the detected boxes sent to the server and the GPS locations marked on a satellite map using Google API.

Automatic Speech Recognition System for Hindi | Srishti 2020 | IIT Roorkee February 2020 - March 2020

- Performed transliteration of raw texts in Hindi (Devanagiri) to English (Roman).
- Extracted Mel Frequency Cepstral Coefficients from input speech waveform and refined the vectors.
- Trained the system with the 'Gaussian Mixture Model + Hidden Markov Model' and 'Deep Neural Network + Hidden Markov Model' acoustic approaches, and estimated an N-gram Statistical Model.
- Analyzed the system performance in terms of word error rate.

Real-time Image Processing on FPGA | ArIES | IIT Roorkee August 2019 - October 2019

- Real-time image processing targeted on the Xilinx Zybo FPGA development kit.
- Applied Sobel Edge Detection filter on the HDMI input video stream and displayed the output video stream on a generic VGA monitor.
- Used the Vivado HLS tool to easily implement an image processing algorithm in C++ instead of RTL.

3D propeller Clock | Srishti 2019 | IIT Roorkee January 2019 - March 2019

- Persistence of vision was used to create an optical illusion wherein LEDs turning on and off for specific durations create a 3D clock when rotated at high speed.
- HC595 shift registers and Arduino were the main components for the project.
- Different patterns like globe and various character strings could be showcased on the frame.

Awards / Scholarships / Academic Achievements

- Bagged Bronze medal in the Inter IIT Technical Meet 8.0 DRDO SASE UAV Fleet Challenge 2020
- Stood 9th in the Matriculation Examination 2016 and received appreciation from the Governor of Assam
- Stood 3rd in Assam Chemistry Olympiad 2017
- Stood 4th in Assam Chemistry Olympiad 2016

Skills

Computer languages	Python, C/C++, Verilog, Javascript, Perl
Software Packages	Tensorflow, Keras, PyTorch, OpenCV, Kaldi, Matlab, Raspberry Pi, Linux/Unix, Arduino, Eagle
Additional Courses Taken	CS231n - Introduction to Neural Networks, Deep Learning by Andrew Ng, Inferential Statistics Analysis with Python
Languages Known	English (SRW) , Bangla (SRW) , Hindi (SRW) , Assamese (SR)

Positions of Responsibility & Extra Curriculars

Member | Artificial intelligence and Electronics Society | IIT Roorkee April 2019 - present

- Currently working on the AUVSI-SUAS competition which will be held in Maryland, the USA in the summer of 2021.
- Worked in the field of computer vision using modules like OpenCV, OpenPose, and ImageAI.
- Worked on automatic speech recognition systems for various Indic languages using the Kaldi Toolkit.
- Worked in the field of open-source hardware such as Arduino and Raspberry Pi.

Project Mentor | Srishti 2020 | IIT Roorkee January 2020 - March 2020

- Worked as a Mentor for the project Farming Drone in Artificial Intelligence and Electronics Society for Srishti 2020.

Councillor | Rajiv Bhawan Technical Council | IIT Roorkee September 2019 - May 2020

- Worked as a councillor in the Technical Council of Rajiv Bhawan for the Session 2019-2020.
- Managed the web record of all the events in the hostel and helped in solving LAN related issues.

Event Coordinator | Cognizance 2019 (Tech-fest) | IIT Roorkee March 2019

- Worked as the event coordinator for the workshop "Image Processing using MATLAB" in Cognizance 2019

Volunteer | NSS(National Service Scheme) | IIT Roorkee July 2018- May 2019

- Worked as a volunteer for the cell Rural Transformation through Education(RTE).

References

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