

Navneet Anand Sah

New Delhi, Delhi
☎ +91 837 688 2885
✉ navneet16170@iiitd.ac.in
📁 [nvanandsah.github.io](https://github.com/nvanandsah)
[linkedin.com/in/navneetanandsah](https://www.linkedin.com/in/navneetanandsah)

Education

- 2016–Present **B.Tech(ECE)**, *IIITD*, New Delhi,
Bachelor in Technology in Electronics & communication Engineering.
- 2014–2016 **Senior Secondary Examination**, *Kalka Public School*, New Delhi, .
Non-medical

Publication

Neha Jain, **Navneet Anand Sah**, Vivek Ashok Bohara and Anubha Gupta, "Experimental Results for Energy Harvesting by exploiting inherent inadequacies of Sampling process for IoT application" accepted in IEEE International Conference on Communications (ICC), Workshop, 2020.

Projects

- Title *Hardware accelerators for Neural Networks*
Supervisor Dr. Sumit Mediratta
Description Using the OpenCL framework, we built a VGG16 CNN(Convolutional Neural Network) for object recognition and RNN(Recurrent Neural Network) for decryption of encoded message to run on heterogeneous environments such as CPUs, GPUs, and FPGAs. OpenCL provides hardware acceleration similar to CUDA, but it can be deployed on non-Nvidia GPUs, making it widely used for edge and fog computing.
- Title *Human and Weapon Detection using CCTV cameras*
Supervisor Prof. Mahesh Babu A K
Description We used YOLOv3, which is a state-of-the-art real-time object detection system. It predicts boxes at 3 different scales and is more efficient than ResNet-101 or ResNet-152. We then used tflite to compress model and deployed it on a Raspberry Pi that was attached to a camera. It collects inferences in real time and is capable of generating occupancy reports and create instant alerts in case of any weapons are detected.
- Title *Image Blending using Homography Detection*
Supervisor Dr. A.V. Subramanyam
Description We created a project to blend two images into a single image based on the similarity of background. Using computer vision and homography detection techniques, contrast and position of the two images based on their contextual information was matched. We then used that information to blend the two images into a single image.

- Title *Drones based data telemetry using Wi-Fi-based IoT nodes with Human Detection using CNN*
- Supervisor Dr. Abhijit Mishra
- Description A camera attached to the drone captures images at fixed intervals, which are then processed using the Convolutional Neural Network (CNN). The CNN model was trained to detect any objects in an image. In our case, we focused on human detection. The Processed data is stored locally on a drone-mounted Raspberry Pi, which is interfaced with a telemetry Radio. Whenever two drones come in a range of transmission, they exchange all their images. When a drone comes in proximity with the base station, all images collected from different drones are transferred to the base station. The program on base station stitches the images to make a video feed, with bounding box on the humans detected.
- Title *Energy Harvesting by exploiting temperature difference between two surfac*
- Supervisor Prof Vivek Bohara
- Description Thermoelectric generators are solid state devices which use temperature difference to produce potential difference (the reverse is also done for refrigeration), without any need of fuel. This process is called the Seebeck effect. These material have low thermal conductivity and high electric conductivity; these properties ensure that both sides of a TEG element remain at different temperature if one side is heated. As they are made from semiconductor and don't have any moving parts they can easily be incorporated in existing technology especially in wearable gadgets. We used LTC 3108 in our system; it is a high-performance power manager and DC-DC step-up converter. It can harvest small power from TEGs, thermal piles, and smaller cells. We were able to harvest 30mW from 1-2 degrees temperature.
- Title *Re-purposing of 18650 lithium-ion cells*
- Supervisor Dr. Sujay Deb
- Description E-vehicles are generally powered by 18650 Li-ion cells which are powerful and have a longer life. Since E-vehicles require high current for speed, it is essential that the maximum current to mass ratio is maintained for the performance. So, these cells are changed after use of just one to two years. These may no longer be used for E-vehicles, but they still possess 75-80% power of its original cell. This project aims at developing algorithms and tools for measuring the State of Health (SoH) of the cell on the basis of key parameters such as the type of cell, original and existing capacity, temperature calculated over a complete or nominal charge and discharge cycle, its initial and present Internal Impedance and State of Capacity (SoC).

Experience

Professional

- Jan'20– **Software Developer Intern**, *The Solar Labs*, Delhi.
- Present Worked on accelerating the program by converting the inference part of the software to parallel GPU executing units and working on various simulations and adding features to the existing product.
- July'19– **Product Design Intern**, *Ampviv Healthcare Pvt. Ltd.*, Delhi.
- Dec'19 Designed a prototype for a medical imaging solution. Worked on embedded systems and other technologies like BLE, Wifi-Direct, digital signal and image processing along with designing and fabricating 3D printed prototype for various iterations of the product.

Miscellaneous

Founder, Knowtek, Delhi.

A Community of hardware and software enthusiasts who have worked various technologies ranging from Open source hardware like Arduino, Raspberry Pi, Beaglebone to open source software like Ionic, NodeJs, Angular JS. It is focussed group of tech enthusiasts building drones to employing AI and Machine Learning for Data analytics

Achievements:

- o Organized 5 workshops on IOT and communication protocols.
- o Organized TinkerHack'18 hackathon at IIIT-D hosting more than 150 participants.

Event Organized.

- o PitchCafe'19
- o TinkerHack'18
- o Virtulix Workshops
- o Jugadathon'17

Subjects

- o Edge AI
- o Wireless Networks
- o Intelligent Applications Implementation on Heterogeneous Platforms
- o Digital Communication Systems
- o Wireless Systems Implementations
- o Advanced Embedded Logic Design
- o Circuit Theory and Devices
- o Integrated Electronics
- o Linear Algebra
- o Signal and Systems

Languages

Python	Intermediate	<i>Back-end development, Image Processing and Neural Networks</i>
MATLAB	Beginner	<i>Signal processing and data munging</i>
C++	Intermediate	<i>Embedded System Design</i>
JAVA	Intermediate	<i>Android Development</i>
Verilog	Beginer	<i>FPGA programming</i>

Other skills

EDA & Simulation tools

LTSpice, LabView, MATLAB, PSpice, SystemC

Cloud Platforms

Amazon Web Services, Google Cloud Platform, Microsoft Azure

Data Acquisition

NI DAQ, Sensor interfacing protocols

Microcontrollers

Nordic BLE Nano v2, Raspberry Pi, ODROID XU4, Beaglebone green, Arduino

Framworks

Django, Flask, Tensorflow, keras, Selenium

References

Dr. Sumit Mediratta

- Assistant Professor
- ECE | IIIT-Delhi
- email - sumit.mediratta@iiitd.ac.in

Mahesh Babu A K

- Assistant Professor, IIITD
- Senior Chief Engineer, CTO's Team, Samsung R&D Institute India-Delhi
- email - a.maheshbabu@samsung.com