*New Delhi, Delhi*
*India*
*+91 837 688 2885*
*navneetanandsah@gmail.com*
*github.com/nvanandsah*
*linkedin.com/in/navneetanandsah*

# Navneet Anand Sah

## Education

2016–Present **B.tech (ECE)**, *IIIT Delhi*, New Delhi, *CGPA - 7.33*.
Bachelor in Technology in Electronics and Communication Engineering

2014–2016 **Senior Secondary Examination**, *Kalka Public School*, New Delhi, *CGPA - 8.98*.
Non-medical

## Projects

Title *Energy Harvesting Wireless Sensory node*

Supervisor Prof Vivek Bohara

Description Using TEGs (Thermo Electric Generators), we made a wireless sensor node. The temperature difference between the ambiance and HVAC vents are being used to harvest 70-80mW of energy. This energy was then used to power a TMP102 temperature sensor and Redbear BLE nano v2, which is a low power BLE enabled microcontroller for transmission — the system using 0.1F supercapacitor to store the charge, and power the system. The energy harvesting from TEGs is done using DC-DC step-up transformers and LTC3108 energy harvesting and management IC. LTC3108 collects charge until it reaches 3.3v and outputs becomes high, this powers BLE, and a packet is sent with the current ambiance temperature.

Title *Energy Harvesting from waste body heat*

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).

Title *Drones based data telemetry using Wi-Fi-based IoT nodes with simultaneous Human Detection using Convolutional Neural Networks*

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.

## Experience

### Professional

Aug'18–Present **Founder & CEO**, *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:

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

Jun'18–Dec'18 **Lead Software Engineer**, *Camcann*, Vellore.

Working remotely in developing a neural networks based edge device for detection of human being

Developing a prototype standalone camera to be used for security surveillance

May'18–July'18 **Research & Development Engineer**, *Ziptrax*, Noida.

Literature review of re-usability of various batteries and cells

Designed an apparatus for collecting data for nominal discharge rate, State of charge and temperature for a complete discharge cycle

May'17–July'17 **Product Design Intern**, *ShuttleScrap*, Gurugram.
Developed an IOT based bin for collecting E-waste
Designed a dashboard for viewing the records of reverse vending machine based E-waste collection bin

### Miscellaneous

**Event Organized**.

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

**Projects**.

- **Autonomous Vehicle Simulation**-Voluntary help for a research based on autonomous vehicles, to test their AI in a virtual environment.Also made an IoT solution for collecting data from sensors, in car placed while recording the dataset.
- **RFID based parking navigator** - RFID based smart parking helper, which guides the user to the allotted parking location inside a parking lot, using LED indicators.
- **VR based classroom using Unity3D** - Developed a VR environment to join and leave a virtual room, that could be used as a classroom.It could be used to place virtual animated models, to aid better learning.

## Subjects

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

## Languages

| | | |
|---|---|---|
| Python | Intermediate | *back-end development, Image Processing and Neural Networks* |
| MATLAB | Beginner | *Signal processing and data munging* |
| C++ | Intermediate | *Embedded System Design, SystemC* |
| JAVA | Intermediate | *Competitive Programming* |
| Verilog | Beginer | *FPGA programming* |

## 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 |
| **Microcontrollers** | Nordic BLE Nano v2, Raspberry Pi, ODROID XU4, Beaglebone green, Arduino |
| **Framworks** | Django, Flask, Tensorflow, Networkx, Selenium |

## Interests

| | |
|---|---|
| Travel | Been on trips to cities like Jaipur, Udaipur, shimla, Bikaner, etc |
| Socializing | Attended networking events and meetups |
| Sports | Play Table Tennis, pool and foosball |

## References


Dr. Sujay Deb
- Assistant Professor
- ECE | IIIT-Delhi
- email - sdeb@iiitd.ac.in

Manoj Gulati
- Research Scientist
- iNICU Medical Pvt Ltd