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Navneet Anand Sah

Education

2016–Present **B.tech (ECE)**, *IIIT Delhi*, New Delhi, *CGPA - 7.41*.
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 *Hardware accelerators for Neural Networks*

Supervisor Prof 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 *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.

Title *Energy Harvesting Wireless Sensory node*

Supervisor Prof Vivek Bohara

Description Using TEGs (Thermo Electric Generators), we designed a wireless sensor node. The temperature difference between the ambiance and HVAC vents were used to harvest few mW of energy. This energy was then used to power a TMP102 temperature sensor and a low power BLE enabled microcontroller for transmission. The energy harvesting from TEGs is done using DC-DC step-up transformers and LTC3108 energy harvesting and management IC. It 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 *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–Present **Sofftware Engineer, Simulations**, *The Solar Labs*, Delhi.
Worked on accelerating the program by converting the inference part of the software to parallel GPU executing units. It helped in gaining significant decrease in inference time.

July'19–Dec'19 **Product Design Intern**, *Ampviv Healthcare Pvt. Ltd.*, Delhi.
Designed a prototype for a medical imaging solution. Worked on Embedded SoC, BLE, Wifi-Direct, Digital Signal and Image Processing along with designing and fabricating 3D printed prototype enclosure.

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

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 analyticsAchievements:

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

Event Organized.

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

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 protocols
Microcontrollers	Nordic BLE Nano v2, Raspberry Pi, ODROID XU4, Beaglebone green, Arduino
Framworks	Django, Flask, Tensorflow, keras, Selenium

Interests

Game Dev	Have made a few games using Unreal engine and unity 3D
Socializing	Attended many networking events and meetups
Reading	Love to read autobiographies, business and technical books

References

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Mahesh Babu A K

- Assistant Professor, IIITD
- Senior Chief Engineer, CTO's Team, Samsung R&D Institute India-Delhi
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