Surjith Bhagavath Singh

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EDUCATION

Master of Science (Electrical and Computer Engineering) **Aug 2015 –Present**

University of Colorado, Boulder

- **Relevant Modules:** Embedded systems design, Programmable systems on chip, Real-time Embedded systems, Advanced computer architecture, Low Power Embedded Design Techniques, Network Systems.

Bachelor of Technology (Electrical and Electronics Engineering) **Aug 2011 –May 2015**

Amrita School of Engineering, Coimbatore, TN, India

- **Relevant Modules:** Embedded systems, Wireless sensor networks, Automotive embedded systems, Microcontrollers, Digital Systems, Fundamentals of Soft computing, Computer Programming, Electronics Engineering

WORK EXPERIENCE

Graduate Engineering Intern, National Renewable Energy Laboratory, Golden, CO **Aug 2016 – Present**

- Working on Training a neural network model, which can be a surrogate model for a highly detailed compute intensive thermo-physiological computer model.

Product Test Engineering Intern, Silicon Labs, Austin, Texas **May 2016 – Aug 2016**

- Worked on developing a robust and cost efficient solution for compensating crystal frequency error on Si5306 die in unforced temperature conditions.
- Developed a platform for Silicon Labs in python for Data Analysis purposes, Firmware for Algorithm(C,C++), Execution flow (Perl)

Graduate Teaching Assistant, University of Colorado, Boulder **May 2016 – Aug 2016**

- Computer Vision course by Dr. Sam Siewert . Developed course material through research for the course and helped students with their doubts.

Co-Founder, Building Brains **May 2016 – Present**

- At Building Brains, we are trying to build a smart outlet for more connected world. My role is to develop the entire prototype and its firmware.

Intern, Amrita Wind Energy Laboratory, Coimbatore **Jun 2014 – May 2015**

- Using the concepts of IoT, developed a data Acquisition System for a micro wind turbine with current, voltage, wind speed, power output, power factor efficiency data.

ACADEMIC PROJECTS

Arctic Multispectral & Passive 3D Imaging project (Research under Prof. Sam Siewert) **Jan 2016 – Present**

- Implementing Hough, Sobel and Fusion algorithms in OpenCL for Altera DE1-SoC and in CUDA for NVIDIA Jetson board for performance and power analysis. Developed a fusion algorithm for LWIR + Visible Image for real time applications.
  Environment: Altera DE1-SoC, NVIDIA Jetson, OpenCL, CUDA, Image Processing, Computer Vision Algorithms

Low Power IoT Smart outlet for elderly people **July 2016 – Present**

- Developing a smart outlet using **Thread** technology, in a small form factor with leakage currents in the range of nA.
- Working on Designing the hardware product/firmware and Mobile Application targeting elderly market.
  Environment: Silicon Labs EFR32(Mighty Gecko) SoC, Altium, Microsoft Visual Studio, Raspberry pi

Machine Learning using GPGPU and CPU – A comparison study **Jan 2016 – May 2016**

- Implemented a basic machine learning algorithm (Hand written code recognition) using python on an embedded GPU, Super computer cluster at University of Colorado, Boulder and on ordinary PCs.
- Comparison study has been done to analyze how embedded GPUs are equivalently powerful as super computer nodes.
  Environment: NVIDIA Jetson, CUDA, Python, Theano, Machine Learning, Janus Super Computer (University of Colorado, Boulder)

Anti-Theft vehicle tracking system **Aug 2015 – Dec 2015**

- An Anti-theft system which can track the vehicle and gives Audio/Video feedback for the user in a web page with user's authentication, Python scripting for the peripherals camera, Mic, GPS, Wi-Fi and GSM Modules. Flask server has been used for web page hosting. Entire hardware is designed and implemented in Altium.
  Environment: Beagle Bone Black, Debian, Camera, Mic, Mp3 encoding, GPS, Wi-Fi, GSM, OpenCV, Python Flask, Altium, Linux driver

Wireless sensor networks for smart grid (Senior year Project) **Aug 2014 –Mar 2015**

- Selected for "Texas Instruments-Innovation Challenge-2015".
- Established a smart grid network prototype applying the concept of wireless sensor networks with the capabilities of a central automated control unit, automatic load balancing using priority method at a low cost.
  Environment: Beagle Bone Black, MSP430, Arduino, ZigBee, Wi-Fi, LabVIEW, Transducers, Signal Processing, Embedded C, Python.

AWARDS & ACHIEVEMENTS

- **Winner -** Texas Instruments Innovation Challenge-India Analog Design College Level Contest 2014.
- Secured **18th** position all over India in National level robotic contest- "ABU ROBOCON-2014".
- Received "**Outstanding Student of the year 2013**" from EEE department, Amrita School of Engineering.

PROFESSIONAL AFFILIATIONS

Secretary (Association of Electrical and Electronics Engineering) **June 2012 –June 2014**

- Organized conferences, technical workshops, peer to peer sessions on embedded systems.

IEEE Student Member **May 2012 –Present**

PUBLICATIONS

Software defined multi-spectral imaging for Arctic sensor networks. Proc. SPIE 9840, Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXII, 98401V (May 17, 2016); doi:10.1117/12.2222966.