Marjerie **Suresh**

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TECHNICAL SKILLS

HDL: Verilog
Programming Languages: C/C++, Python, CUDA, Embedded C
Hardware Platforms: Spartan®-3E FPGA, Arduino, Raspberry Pi, ARM LPC2148, Intel 8086 & 8051
EDA/Software Tools: Cadence PSpice, Virtuoso, Xilinx® ISE, ModelSim, MATLAB, Keil uvision
Open-Source: Tensorflow

EXPERIENCE

Project Intern *Chennai, India*
IIT - MADRAS *Jun 2020 – Oct 2020*

- Worked on the CUDA implementation of Parallel BloomTree - a space-efficient approximate representation for graphs using bloom filters for GPU under Dr. Rupesh Nasre.
- Tested the performance of the implementation on the Breadth-first search, Greedy vertex colouring and Tarjan's strongly connected components algorithms.

Undergraduate Research Assistant *Chennai, India*
SOLARILLION FOUNDATION *Apr 2018 - May 2020*

- Researched and worked on the development of intelligent optimisation algorithms using Python for Indian rural microgrid systems to improve system efficiency, agricultural productivity and energy utilization.

Work 1: Intelligent Interconnection of Operating Micro-Grid and Irrigation System in Dharnai - A Rural Indian Scenario *Apr 2018 - Mar 2019*

- Designed a dynamic load profile for agricultural demand in rural India with crop yield and weather data.
- Developed an intelligent algorithm on Python to promote efficient energy utilization.
- Improves the system efficiency by 10.5 percent and agricultural efficiency by 13 percent.
- Published in 2019 IEEE Global Humanitarian Technology Conference proceedings. (here)

Work 2: Smart Energy Routing For Rural Islanded Microgrid Clusters *Apr 2019 - Nov 2019*

- Built an algorithm using Python to solve a multi-variable optimization problem to maximize the utilization of energy resources in a rural microgrid cluster.
- Reduces cost of system by 11.3 percent and improves the efficiency by 4.9 percent.
- Published in 2020 IEEE Texas Power and Energy Conference proceedings. (here)

Work 3: Irrigation Load Optimization for Enhanced Agricultural Productivity in Rural Microgrid Clusters *Nov 2019 - May 2020*

- Developed an algorithm to improve irrigation load in rural microgrid clusters using Python.
- Enhances the irrigation load efficiency by 9.1 percent and amount of irrigation by 22.6 percent.
- Presented the paper in the 2020 IEEE Global Humanitarian Technology Conference.

Vetronics Trainee *Chennai, India*
CVRDE, DRDO *May 2019*

- Extensive hands-on training in the architecture, components and functioning of automotive, fire detection and suppression and laser warning and countermeasure systems in Main Battle Tanks.

COLLEGE PROJECTS

Air Pollution based Routing Algorithm for VANETs *Aug 2019 - Feb 2020*
TOOLS: C++, OMNET++, SUMO

- Helps commuters reduce exposure to harmful polluted air by taking routes with better air quality.
- Developed a technique based on A* search algorithm to identify routes with low mean Air Quality Index (AQI).
- Simulated in realistic scenario and obtained an average reduction of 18 units in mean AQI.

Portable Optical Character Recogniser *Apr 2019 - Jul 2019*
TOOLS: PYTHON, RASPBERRY PI

- Implemented portable OCR using Raspberry Pi and Pi camera to extract text from input images.
- Worked on a pipeline to pre-process the input image to remove noise.

Machine Learning approach on On-Time Performance of Flights *Jul 2018 - Oct 2018*
TOOLS: PYTHON, SCIKIT-LEARN

- Assists passengers and airlines to avoid the risk of flight delays and cancellations due to weather.
- Worked on a two-stage predictive model where the first stage performs classification to predict if delay occurs and the second stage performs regression to predict the value of the delay in minutes.
- Got an accuracy of 92 percent in classification and a mean absolute error of 7 minutes for regression.

Autonomous Rubik's Cube Solver *June 2018 - Oct 2019*
TOOLS: ARDUINO, STEPPER MOTORS

- Worked on the algorithm to guide the stepper motors to solve the cube based on input image.
- Competitive college wide project funded through the SSN Trust and was given a grant of Rs. 24,000 for project expenses.

EDUCATION

Sri Sivasubramaniya Nadar College of Engineering *Chennai, India*
B.E. IN ELECTRONICS AND COMMUNICATION ENGINEERING,
CGPA: 8.41/10 *Jun 2016 - Apr 2020*

NPTEL (Online Learning Initiative by Govt. of India)
TO ACQUIRE SKILLS IN MACHINE LEARNING, GRAPHICS AND COMPUTER ARCHITECTURE.
Courses: Deep Learning, Practical Machine Learning with Tensorflow, GPU Architectures and Programming, Multi-Core Computer Architecture - Storage and Interconnects

HONORS & AWARDS

2019 **Semi-finalist**, Smart India Hackathon 2019 – Hardware Edition *Chennai, India*
2018 **Funding for "Autonomous Rubik's Cube Solver"**, The SSN Trust *Chennai, India*
2017 **Innovator of the year - Runner**, IEEE Communications Society *Chennai, India*

VOLUNTEER EXPERIENCE

2019 **Reviewer**, IEEE Texas Power and Energy Conference (TPEC) - 2020 *Texas, USA*
2019 **Event Head**, National Technical Fest - Invente *Chennai, India*
2018 **Organiser**, Digital Electronics Workshop *Chennai, India*

TRAINING

2018 **Python Programming**, IIT Madras Research Park *Chennai, India*
2017 **Hands on Internet of Things – A Hardware Perspective**,
IEEE Communications Society *Chennai, India*