Shree Hari Sureshbabu
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Purdue University

School of Electrical and Computer Engineering
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EDUCATION

2018 – Present **Ph.D.** in Electrical and Computer Engineering
Purdue University, West Lafayette, Indiana, USA
GPA: 3.5

2014 - 2018 **B.E** in Electrical and Electronics Engineering
M.S. Ramaiah Institute of Technology, Bangalore, Karnataka, India
GPA: 9.52/10.0

SKILLS

Programming Languages: C/C++, Java, HTML, JavaScript, Python, Bash, PHP

Libraries: PyTorch, TensorFlow, Keras, numpy, PennyLane, Qiskit

Softwares and Tools: Silvaco TCAD, MATLAB, LabVIEW, Origin, Git, Cadence Virtuoso

Fabrication Techniques: Spin coating, Electron beam lithography (EBL), Thermal and e-beam evaporation, Sputtering, Chemical Vapor Deposition, Atomic Layer Deposition

Characterization Techniques: Capacitance-Voltage, IV-CV, Scanning Electron Microscopy, Ultraviolet spectroscopy, X-ray Diffraction.

RESEARCH EXPERIENCE

Aug'18 – Present **Graduate Research Assistant,** School of Electrical and Computer Engineering, Purdue University, West Lafayette
Advisor: Prof. Sabre Kais
Research:
- *Quantum Machine Learning for Chemistry Applications.*
- *Hardware considerations for Spiking Neural Networks and Spike Timing Dependent Plasticity (STDP).*
- *Design and Fabrication of BP based FETs.*
- *Worked on atomistic simulation of III-V devices.*

Nov'17 – April'18 **Research Student, Undergraduate Thesis,** Centre for Nano Science and Engineering Indian Institute of Science, Bangalore
Advisor: Prof. Digbijoy N. Nath
Research: Modelling of 2D/3D heterostructure based photodetector for deep UV applications.

June'17 – Aug'17 **Summer Research Intern,** Polymer Processing Laboratory, Centre for Nano Science and Engineering Indian Institute of Science, Bangalore
Advisor: Prof. S.A. Shivashankar
Research: Characterization and application of Cu_2S nanoparticles using microwave irradiation.

Aug'16 – June'17 **Research Assistant**, Department of Medical Electronics, M.S. Ramaiah Institute of Technology, Bangalore
Advisors: Prof. Sriraam. N and Dr. A.S. Hegde (Director - Neurosurgeon, M.S. Ramaiah Memorial Hospital, Bangalore)
Research: Processing of Electroencephalogram data for the real-time detection of epileptic seizures with a long-term goal to study Alzheimer's disease.

June'16 – Aug'16 **Summer Research Intern**
Polymer Processing Laboratory, Centre for Nano Science and Engineering
Indian Institute of Science, Bangalore
Advisor: Prof. S.A. Shivashankar
Research: Synthesis and Characterization of $CuAlO_2$ nanoparticles using microwave irradiation.

PROFESSIONAL COURSES

Jul'19 – Sep'19 ***Online course on "Quantum Machine Learning" (edX course)***
Instructor: Prof. Peter Wittek
University of Toronto.
As part of the course, I worked on Qiskit and implemented the following:

- *Gate-Model Quantum Computing*
- *Quantum Annealing for Optimization*
- *Variational Circuits*
- *Ensemble Learning & Discrete Optimization*
- *Discrete Optimization in Unsupervised Learning*
- *Quantum-Enhanced Kernel Methods*
- *Quantum Phase Estimation*
- *Quantum Matrix Inversion*

Aug'16 – Sep'16 ***Online course on "Magnetic materials and devices" (edX course)***
Instructor: Prof. Caroline Ross,
MIT Department of Materials Science and Engineering.

AWARDS

- Meissner Fellowship, Purdue University.
- Award for Academic Achievement by BEML Limited, 2014.
- Samskruthi Award by Janmabhoomi Samskruthika Nagarikara Vedike, Bangalore, 2012.
- State Bank of India Scholarship.

RESEARCH PROJECTS

Purdue University, West Lafayette, Indiana, USA
School of Electrical and Computer Engineering
PhD Student

- Working on quantum phase estimation using quantum machine learning.
- Implemented Memrisitve crossbar array based Unsupervised Learning of Digit Recognition using Spike Timing Dependent Plasticity (STDP) in Pytorch.
- Implemented a CLDNN on time-series data for wireless RF modulation classification.

Purdue University, West Lafayette, Indiana, USA
Birck Nanotechnology Center
PhD Student

- Fabricated Field Effect Transistors (FETs) using 2D materials for logic and hardware security applications.
- Modeled the device in Python and analyzed the effect of gating in Schottky barrier FETs.

Purdue University, West Lafayette, Indiana, USA
School of Electrical and Computer Engineering
PhD Student

- Semiclassical and Quantum Transport modeling of nano-electronic devices.
- Investigated different architectures for Tunneling Field Effect Transistors (TFETs).
- Implemented NEGF based quantum transport model in Python for III-V devices.

Indian Institute of Science, Bangalore, India (November 2017 – April 2018)
Centre for Nano Science and Engineering (CeNSE)
Visiting Research Student

- Modeled MoS_2/GaN heterostructure based vertical photodetector pertaining to deep UV applications using Silvaco TCAD package.
- Worked closely with experimentalists to obtain a detailed analysis of the transport of carriers in the device.

Indian Institute of Science, Bangalore, India (June 2017 – August 2017)
Polymer Processing laboratory, CeNSE
Summer Research Intern

- Synthesized Cu_2S nanomaterial using a bio-compatible precursor by the microwave method.
- Characterized the self-assembled nanomaterial using XRD, SEM, UV, and NMR spectroscopy.

M.S. Ramaiah Institute of Technology, Bangalore, India (August 2016 – June 2017)
Department of Medical Electronics, MSRIT
Research Assistant

- Developed a real-time epileptic seizure detection biomarker.
- Removed artifacts in the data, processed the EEG signals, and utilized a neural network classifier to classify the seizures.

Indian Institute of Science, Bangalore, India (June 2016 – August 2016)
Polymer Processing laboratory, CeNSE
Summer Research Intern

- Synthesized transparent p-type delafossite $CuAlO_2$ using a domestic microwave.
- Characterized this material using XRD, SEM, UV, and NMR spectroscopy.

OTHERS

- Attended "*Quantum Machine Learning and Data Analytics Workshop"* at Purdue University.
- Volunteer at TEDx(MSRIT).
- Certified LabVIEW Associate Developer.