

Shree Hari Sureshbabu

Ph.D. Student
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

Libraries: PyTorch, TensorFlow, Keras, numpy, Qiskit

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

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 <i>Advisor: Prof. Kaushik Roy</i> <i>Research:</i> <ul style="list-style-type: none">• <i>Hardware considerations for Spiking Neural Networks and Spike Timing Dependent Plasticity (STDP).</i>• <i>Design and Fabrication of BP based FETs.</i>• <i>Worked on atomistic simulation of III-V devices.</i>
Nov'17 – April'18	Research Student, Undergraduate Thesis , Centre for Nano Science and Engineering Indian Institute of Science, Bangalore <i>Advisor: Prof. Digbijoy N. Nath</i> <i>Research: Modelling of 2D/3D heterostructure based photodetector for deep UV applications.</i>
June'17 – Aug'17	Summer Research Intern , Polymer Processing Laboratory, Centre for Nano Science and Engineering Indian Institute of Science, Bangalore <i>Advisor: Prof. S.A. Shivashankar</i> <i>Research: Characterization and application of Cu₂S nanoparticles using microwave irradiation.</i>

- 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 CuAlO₂ 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

- Implemented Memristive 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 MoS₂/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 Cu₂S 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 CuAlO₂ 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.