

# Shree Hari Sureshbabu

Ph.D. Student  
Purdue University

School of Electrical and Computer Engineering  
Purdue University  
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## EDUCATION

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2018 – Present	<b>Ph.D.</b> in Electrical and Computer Engineering Purdue University, West Lafayette, Indiana, USA GPA: 3.5
2014 - 2018	<b>B.E</b> in Electrical and Electronics Engineering M.S. Ramaiah Institute of Technology, Bangalore, Karnataka, India GPA: 9.52/10.0

## SKILLS

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**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

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Aug'18 – Present	<b>Graduate Research Assistant</b> , 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"><li>• <i>Hardware considerations for Spiking Neural Networks and Spike Timing Dependent Plasticity (STDP).</i></li><li>• <i>Design and Fabrication of BP based FETs.</i></li><li>• <i>Worked on atomistic simulation of III-V devices.</i></li></ul>
Nov'17 – April'18	<b>Research Student, Undergraduate Thesis</b> , 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	<b>Summer Research Intern</b> , 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 Cu<sub>2</sub>S 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 CuAlO<sub>2</sub> nanoparticles using microwave irradiation.*

## PROFESSIONAL COURSES

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- 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

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- 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

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### 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 MoS<sub>2</sub>/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<sub>2</sub>S 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<sub>2</sub> using a domestic microwave.
- Characterized this material using XRD, SEM, UV, and NMR spectroscopy.

**OTHERS**

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