

# Varun Mannam

## Education

- August 2017 - Present **Ph.D, Electrical Engineering, University of Notre Dame.**
- July 2010 - **Master of Technology (M.Tech), Electrical Engineering, IIT KGP, India.**  
May 2012 *Thesis:* Design of Narrowband Bandpass Filters using Dual-mode Open-loop Resonators  
Advisors: Dr. Arjith De and Prof. Subrata Sanyal

## Experience

- Aug 2018 - Present **Graduate Research Assistant, Electrical Engineering, University of Notre Dame.**  
Convolutional Neural Networks (CNNs) using The Hadamard Method: An Energy Efficient Approach
- Designed fast and efficient neural network framework with limited resource availability.
  - Verified the proposed approach with MNIST and CIFAR-10 datasets.
- Aug 2017 - **Graduate Research Assistant, Electrical Engineering, University of Notre Dame.**  
Aug 2018 Performance Analysis of Timing Synchronization in Low Power mmWave Communications
- Modeled and analyzed the time synchronization between transmitter and receiver for low-power IoT devices.
- Dec 2012 - **Staff Software Engineer, National Instruments, R & D Austin, USA and Bangalore, India.**  
Aug 2017
- Designed the transmitter and receiver blocks for **802.11ax WIFI** and **Bluetooth** protocols.
  - Analyzed the uplink MU-MIMO (multi-user multiple input multiple output) system.
  - Designed 2<sup>nd</sup> generation Vector Signal Transceiver (**VST2.0**) for large bandwidth applications.
  - Designed algorithms to test Wireless Chips for connectivity and cellular protocols (WIFI, Bluetooth and GSM) using Wireless Test System (WTS).
  - Designed algorithms to extract real-time **narrow-pulse rise-time** with small-bandwidth devices.
  - Designed new **synchronization algorithm** based on the *Preamble* field in **Bluetooth** that performs better than *Correlation* method and extended this idea for **Automatic Packet Detection** in receiver.
- July 2010 - **Graduate Research Assistant, IIT Kharagpur, India.**  
June 2012 Designed the narrow-band bandpass filter using open-loop resonators for the space applications.

## Computer skills

- Languages Python, MATLAB, C++, Core Java
- Tools VHDL, Verilog, ADS, SystemVue, LABVIEW, Teststand, IE3D, Ansys HFSS, CST, Spice
- Machine Learning Pytorch, Tensorflow, Keras

## Honors

- Spotlight award in 2014 and 2015, National Instruments (*R&D* Bangalore, India)
- Graduate scholarship in 2012, Government of India Merit scholarship
- Gold Medal in Undergraduate studies 2010, Acharya Nagarjuna University, India
- Silver medal in Maths Olympiad 2007, Andhra Pradesh, India