

# Vamsi Peddinti

RESEARCH ENGINEER · EMBEDDED SOFTWARE ENGINEER

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## Summary

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Current Research Engineer Intermediate at University of Michigan. 3+ years experience specializing in the robotics, embedded systems and PCB designing. Interested in devising a better problem-solving method for challenging tasks, and learning new technologies and tools to meet the company requirements and develop my skills further.

## Education

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### M.S in Electrical, Electronics and Communications Engineering

Indianapolis, IN, USA

INDIANA UNIVERSITY PURDUE UNIVERSITY-INDIANAPOLIS

Jan. 2016 - Aug. 2018

- Thesis in "Smart Shoe Gait Analysis and Diagnosis: Designing and Prototyping of Hardware and Software."

### B.S in Electrical, Electronics and Communications Engineering

Hyderabad, Telangana, India

GITAM UNIVERSITY-HYDERABAD

May. 2011 - Aug. 2015

## Work Experience

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### Research Engineer Intermediate

Ann Arbor, MI, USA

UNIVERSITY OF MICHIGAN

Sept. 2019 - Present

- Designed and team lead for the embedded systems of Comex2 and Open Source Leg.
- Worked extensively with elmo motor driver and its communication via CANopen protocol.
- Developed a sophisticated sensor communication system that uses BLE, SPI, I2C, WiFi, RF, USB and Ethernet protocols to perform multi task controllers for robotic prostheses and exoskeletons.
- Designed code in Raspberry Pi in RaspbianOS and Debian to communicate with multiple actuators, load cells and interfaced it different protocols via Python programming. Applied different RT kernel patches and improved the latency.
- Designed multiple PCBs for prosthetic legs and exoskeletons for connectivity, battery management and other communication applications.
- Hands on experience with Delsys Trigno EMG system and successfully conducted multiple human subject experiments.
- Managed and guided a team of PhD and masters students, as well as interns in various projects ranging from data processing using MATLAB to the actuator testing.

### Research Engineer

Richardson, TX, USA

UNIVERSITY OF DALLAS

Oct. 2018 - Sep. 2019

- Developed code on CCS IDE for an exoskeleton, which allows the communication of data via CAN, UART, USB and RS-232, using C2000.
- Tuned the parameters of multiple motors using the elmo drivers and Dephy drivers.
- Synchronized interrupts via RTOS and setting up priorities to them to reduce the overall response time.
- Designed multiple PCBs for a prosthetic leg for battery management and data communication.
- Extensively worked on Labview using NI's Myrio.

### Graduate Research Assistant

Indianapolis, IN, USA

IUPUI

Aug. 2016 - Aug. 2018

- Conducted research in the field of VLSI Circuit Design, Embedded systems and Biomedical Engineering.
- Designed and developed a wearable medical device that detects multiple gaits and sends that information via BLE.
- Integrated, improved, and analyzed large data from sensor fusion using Embedded C.

### Graduate Teaching Assistant

Indianapolis, IN, USA

IUPUI

Jan. 2017 - Dec. 2017

- Provided weekly individual instruction and guidance through tutoring and mentoring.
- Worked as a teaching assistant to digital signal processing lab for two consecutive semesters. Helped students understand simple to very complex DSP programs on FRDM K64f and Wolfson Audio Card using Keil microvision and MATLAB.
- Closely worked with oscilloscopes and designed two new projects for future use of the lab.

# Publications

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## **Electromagnetic and Thermal Simulations of Human Neurons for SAR Applications**

*Indianapolis, IN, USA*

JOURNAL OF BIOMEDICAL SCIENCE AND ENGINEERING

*Aug. 2016*

- Designed a TEM cell that generates 0.6W power via HFSS and verified the impact on a neuron which is placed inside the cell using COMSOL. Electromagnetics and thermal modules were used.
- Results obtained show that the 0.6W power can be generated within the TEM cell and neurons were not impacted by the heat generated.

## **Antenna Design and SAR Analysis on Human Head Phantom Simulation for Future Clinical Applications**

*Indianapolis, IN, USA*

JOURNAL OF BIOMEDICAL SCIENCE AND ENGINEERING

*Sept. 2017*

- An extension to the previous paper, this paper shows the design of a Yagi Uda antenna which generates the required 0.6W power. Four Yagi Uda antennae were simulated such that it is placed around the human phantom head. The neurons were placed at the centre and the impact of the antennae on it was tested.
- Bioheat and Electromagnetics modules were used.