Vaibhav Murali

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Github to be included Phone: +1-917-519-1685

EDUCATION

University of Southern California (USC) **CGPA: 3.6/4.0**
Master of Science (M.S.), Medical Device and Diagnostic Engineering May 2019
SSN College of Engineering, Anna University **CGPA: 8.01/10.0**
Bachelor of Engineering (B.E.), Biomedical Engineering June 2017

TECHNICAL SKILLS

Languages	C, C++, Python
Platform	Arduino, Intel 8051, Intel 8086, TI MSP 430, Atmel-AVR, PIC, Raspberry Pi, BioRadio
Software	Arduino IDE, Atmel Studio, MATLAB, LABVIEW, LT-Spice, Eagle, Cadence Virtuoso
Hardware	Oscilloscopes, Function & Signal Generator, Soldering, DAC, ADC, DMM

EXPERIENCE

Laboratory Student- Digital MOS VLSI August 2018
University of Southern California Los Angeles, CA

- Design of circuits involving area, delay & power minimisation. Includes design, layout, extraction, simulation & automatic synthesis

Laboratory Student- Electrophysiology August 2018
University of Southern California Los Angeles, CA

- Involves the use of design principles for medical devices and instrumentation that interact with electrically excitable tissues of the body

Student Grader August 2018
University of Southern California Los Angeles, CA

- Assisted in setting up, monitoring, grading laboratory experiments in instrumentation laboratory and signal processing laboratory. Graded exams & uploaded the scores via Blackboard

Biomedical Engineer Intern July 2016
Philips Innovation Chennai, India

- Inspected, calibrated & tested medical equipment along with analysis & documentation of test results

PROJECTS

Design of Artificial Neuron

- Implemented Mealy Machine circuit using Cadence Virtuoso
- Involved flipflops & compound gates to replicate the firing of neurons

Laboratory Model of a Low-Cost Dialysis Machine

- Headed a team of three to model a low cost dialysis machine using refurbished materials & cost effective electronic components
- Engineered a machine that performs basic operations such as monitoring pressure, temperature & detecting air bubbles present inside blood drawn from patient

Transcutaneous electrical nerve stimulation using EEG

- Research project aimed at treating pain automatically based on EEG pattern
- Involved designing a cap with electrodes embedded on it to extract brain waves along with appropriate signal processing to get a meaningful signal to treat pain

Design of ultrasound airflow transducer

- Developed an ultrasound transducer model in LT SPICE and simulated it
- Replicated model for three flow rates and observed linear relationship of volume over time

Design of brain tissue oximeter

- Developed and simulated brain tissue oximeter using 555 timers in LT SPICE
- Generated diode current driver circuit for constant current during activation of timer

Implementation of radial artery to aortic transfer function

- Constructed a linear circuit to calculate transfer function
- Observed aortic flow during normal and abnormal heart conditions in MATLAB

COURSEWORK

- **Graduate:** MOS VLSI Circuit design, Bioinstrumentation, Ultrasonic Imaging, Signals & Systems
- **Undergraduate:** Digital Image Processing, Analog and Digital Integrated Circuits, Analog and digital communication, Neural Networks, OOPS & Data Structures, Sensors & Measurements