Soham Karanjikar

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Education

University of Illinois Urbana-Champaign Cumulative GPA: 3.5/4.0
Electrical Engineering August 2017-December 2020

Interests & Skills

Actively seeking an full time role in: Power Electronics, Embedded Systems, Electrical Design
Communication: English (Fluent), Hindi (Fluent), Marathi (Fluent), Mandarin (Basic), French (Basic)
Programming: Java, Python, C/#/++, System Verilog

Experience & Activities

Test Equipment Engineer - IBM (Jun 2020 - Present)

Full-time

- Designing PCBs and systems for testing IBM processors (wafers and modules) prior to their implementation in servers or mainframes.
- Create schematics, parts, and communicate with vendors to verify layout of boards capable of 16Ghz, 500A+, 500+ signals, and 20+ power domains. Test and validate the boards once fabricated and do any necessary engineering changes and fixes that might occur during its lifetime.
- Designed multiple PCBs that add extra functionality to existing boards that are modular and universal, a huge advantage and cost saver. Further, created testing boards with ARM processors that allowed us to test these PCBs automatically before implementing them in manufacturing setting. Python interface that sends high level commands to STM32 (C/C++) that does low level communication, testing and measurement.
- Tested components and circuits on lab benches to debug, test and improve circuits. This includes heavy use of scopes, bench top equipment, heat cameras and custom created test platforms to automate debug.
- Fully own a project and communicate with multi-disciplinary teams from Design For Test to finally manufacturing floor and technicians in charge of day to day maintenance.
- Working in an agile environment with weekly meetings and feedback sessions with team members.

Internship

- Coded the firmware for a card that independently controlled the voltage, current, and power of 96 channels through the use of a custom board and ATMEGA controller. CLI interface was also implemented for quick and easy user control.
- Designed and implemented a board that simulates signals of a Power Factor correction and DC-DC converter card. This board allowed firmware designers to be able to test code with real analog/digital inputs without having to connect to a physically large, high voltage system.

Embedded Systems Intern

Hennessy Industries (May 2019-August 2019)

- Implemented a new sensor on Wheel Balancing machine which automatically measured wheel dimensions and reduced sensor cost by 50%, $500K/yr in savings.
- Prototyped the first fully touch less wheel balancer with real-time 2D mapping of tire profile using ultrasonic sensors and encoders.
- Side projects involving validation as well as software/hardware modifications to existing machinery: Adding Speech to a machine, modifying test equipment to collect data and visualize it, .NET application to monitor real time flow on assembly line to quickly find issues.

Illini Hyperloop President (August 2017- December 2020)

University of Illinois Urbana-Champaign

- In charge of holding meetings, recruiting, and educating new members about Hyperloop.
- Designing and making circuits to integrate sensors, relays, fuses, power distribution, and micro controllers into the pod for safe usage of 120V, 80kW battery back.
- Invited to compete in 2019 Hyperloop SpaceX competition. Placed 12th out of over 100 teams from around the world.

Undergraduate Research (August 2020-December 2020)

University of Illinois Urbana-Champaign

- Research assistant for Bat Bot (B2) project, a robot that mimics the flight of real bats. Designed a new electronics board that is lightweight and small.
- Research assistant for Prof.Banerjee, designing a new 18 phase motor design. Integrated a way for Simulink to program custom FPGAs.

Awards & Side Projects

- Made a 450 Drone with camera for under $100 which has almost as much capability as a $1000+ drone from DJI.

- Project in sensor instrumentation class consisted of using Python to interact with an FPGA that was connected to multiple sensors, lab equipment, camera. Had to write SystemVerilog and through reading data sheet and communication protocols to do this on hardware and be able to complete everything that the Python script sends.
- Designed FlappyBird game fully in SystemVerilog and programmed on FPGA to run with PS/2 Keyboard.