Gaurav Bhalla

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Portfolio (gauravbhalla990.github.io)

EDUCATION

Texas A&M University, College Station, Texas

Bachelor of Science in Computer Engineering - Electrical Engineering Track. *May 2022*
Minoring in Mathematics *Cumulative GPA: 3.5*

Related Coursework

Electricity & Magnetism, Circuit Theory, Analog Design, RF Design, Digital Design, Advanced Computer Architecture, Operating Systems, Microprocessor System Design, CMOS VLSI design, Data Structures & Algorithms, Communications & Cryptography, Programming in ARMv8, C, C++, Java, Python, and MATLAB.

Skills Summary

Extensive experience with test bench equipment (multimeters and oscilloscopes); doing analog and digital design on a breadboard; electron microscopes parts and techniques; analyzing PCB layout file through Autodesk EAGLE; doing PCB connection validations with multimeter; soldering, and welding; developing a basic routing algorithm for FPGAs; using embedded systems such as Arduino, and ST Microcontroller boards; using LTSpice, PSpice, NI Multisim, Autodesk EAGLE, Verilog HDL, Google Sketchup, Tinker CAD, Python, C, C++, SQL, HTML JavaScript, CSS, GIT, and GitHub for projects; using Linux – Ubuntu commands; and basic RF engineering practices.

Practiced collaborating, documenting specifications, and presenting for projects. For instance, I work on, and present research work biweekly, and ask questions and support the graduate students in my R&D group. Also, participated in leadership, logistics, mentoring and conflict resolution experiences as an Engineering Peer Mentor and then Resident Advisor.

Lived and studied globally, and learned conversational French, intermediate Hindi, and basic Spanish.

TECHNICAL EXPERIENCE

Aggies Invent NSA, 3rd Place Winner, *Sensory Overload*, Texas A&M *Sep. 2021*
https://engineering.tamu.edu/news/2021/09/first-in-person-aggies-invent-in-two-years-hosted-by-national-security-agency.html

- Developed a solution for pedestrian and cyclist accidents in 48-hour hackathon. (6-member team)
- Designed a model that informs the user through sensors with a vibration motor and a buzzer. Applies AI, integrates real-time data from other users and Google Maps API to predict dangerous areas in the user's vicinity.
- Built working prototype with materials team had on hand: Arduino, wires, 2 Piezo buzzers, 2 breadboards, 1 IR sensor, 1 ultrasonic sensor and a battery pack.

Physical Design Researcher, Texas A&M Computer Engineering *Apr. 2021 – Present*

- Working under professor to develop an optimal routing algorithm for FPGAs.
- Applying concepts from VPR, Xilinx's RapidWright, and FLUTE, to develop a functional routing algorithm

Texas A&M Amateur Radio Club *Oct. 2019 – Present*

- Passed FCC Technician licensure exam so am licensed to communicate over certain frequency bands.
- Worked on building an AM crystal radio receiver and currently working on FCC General and Extra licenses.
- Creating an AM crystal radio. Receiver with a Phillmore crystal earpiece for the initial audio output. Later, a LM386 power amplifier IC will be used to provide sufficient power to a speaker for the final audio output.
- Introduced to smith charts and other RF concepts at Keysight Technologies seminar.

ASIC Validation Researcher, Texas A&M *Aug. 2020 – Mar. 2021*

- Testing the accuracy of an ASIC designed to detect alpha particles.
- Validated a custom PCB designed to interface the ASIC to a computer via a microcontroller board.
- Analyzed the PCB layout file of the custom PCB in Autodesk EAGLE, Found and addressed functional issues.
- Developed an Arduino program to provide stimulus to and receive data from the ASIC.
- Solved interface logic-level compatibility issue with a TI 74LVC245 Logic Level Shifter.

IEEE TAMUmake 2019 Participant, Texas A&M *Jan. 2019*

- Created a Checkmate algorithm in Python 3.6 for a virtual chess board as part of a four-member team.
- Programmed a four-digit seven display to be a timer with the Arduino IDE.
- Implemented use of the OpenCV API to recognize chess pieces and their positions on the chess board from pictures taken by the Arduino camera shield.

LEADERSHIP

Resident advisor *Aug. 2021- Present*

- Mentor students, resolve conflicts, monitor halls, performs room inspections, and ensure compliance of university policies.

Engineering Peer Mentor, Texas A&M *Aug. 2019- March 2020*

- Collaborated with Resident Advisors to mentor resident engineering students in their first year of college.

Texas A&M Corps of Cadets *Aug. 2018 – May 2019*

- Learned to overcome adversity, time management, perseverance, rational thinking, self-discipline, and leadership skills.