

ADVAITH BALA

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EDUCATION

University of Illinois Urbana Champaign, BS Aug. 2020 – May 2024
Major: Computer Engineering, Minor: Mathematics, GPA: 3.84 Champaign, IL
Coursework : *Computer Systems (OS & Kernel) Engineering, Computer Architecture, Applied Parallel Programming, Communication Networks, Computer Security, Digital Signal Processing, Linear Algebra*

WORK EXPERIENCE

Special Projects Intern - Electrical Hardware March 2023 – Present
Rivian Automotive, Inc. Champaign, IL

- Took direction from Verification lead to understand the overall Device Under Test (DUT) functional specs, Verification Environment including Drivers, Checkers, Monitors.
- Develop Test Plans and Write Tests, File Bugs and Debug root cause.
- Automation scripts Metrics Generation including dashboards and KPIs.

Computer Vision Intern July 2022 – August 2022
Remidio Innovative Solutions Remote (Glen Allen, VA)

- Spearheaded data science research to create a novel deep CNN model for cataract detection using phone images
- Formulated an Iris-Cropping mask algorithm to shrink patient dataset size by **200 times** without loss in quality
- Paralellized image preprocessing filters to decrease model run-time on the IOS app to **2.3 seconds**

Teaching Assistant and Grader Aug 2021 – Current
University of Illinois Urbana Champaign Champaign, IL

- **ECE 385, Computer Architecture:** Aided in teaching and debugging SystemVerilog projects
- **ECE 110, Intro to Electronics:** Planned course material, held weekly office hours, and hosted lab sections

PROJECTS

Unix-like x86 Kernel and Operating System | *Embedded C, x86 Assembly* May 2022

- Wrote **x86 assembly** and **C** kernel code for a single core Unix-like operating system
- Implemented features like **read-write file system, paging, and segmentation** and **drivers** to support interrupts from devices such as keyboard, PIC, RTC, and Tux-Controller
- Created a **VGA-based Desktop GUI** and **shell** program that executes commands like **ls, cd, cat**, etc... through kernel-invoked system calls

FPGA Game Development: "Duck Hunt" with Wii remote | *SystemVerilog, C, Python* | [video link](#) Dec 2022

- Used **FPGA** with **NIOS II** as **SoC** to generate VGA signals, wrote custom Wii Remote **hardware drivers**
- Wrote a novel Python-to-SystemVerilog graphical library to convert GIF images to animated VGA game sprites
- Created robust **Game Difficulty AI** powered by random number seed generated by user input

MIDI Controlled Theremin | *Python, Arduino & C++, IC Circuit Design* | [video link](#) May 2021

- Built an analog theremin instrument from scratch and created 3D-printed robotic arm to play it
- Formulated python code that parses a MIDI file to an array that maps music notes to servo motor angles

ACTIVITIES

UIUC HKN (Eta Kappa Nu) ECE Honors society, Initiate and Service Member 2021 - Current
UIUC ECE Student Advancement Committee, Member of the Academic Committee 2021 - Current
Music Composition, Performance and Songwriting, Piano, Guitar, and more | [portfolio link](#) 2017 - Current
Dhirubhai Ambani International School Student Council, House Captain 2019 - 2020

TECHNICAL SKILLS

Programming Languages: Python, C/C++, Java, SystemVerilog, NVIDIA CUDA, x86 Assembly

AWARDS

James Scholar, Engineering college honors
Dean's List (all semesters)