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EDUCATION

University of Illinois at Urbana-Champaign | *Bachelor of Science* in Computer Engineering | *Urbana, IL* **May 2024**
Aditya Birla World Academy | International Baccalaureate Diploma Program (IBDP) | *Mumbai, India* **May 2020**

SKILLS

C/C++ | SystemVerilog | x86 Assembly | Python | Python Image Library | ReedSolo | PCB Design | KiCad | Soldering | Autonomy | Open Computer Vision UART | I2C & I2S | Microprocessors | PWM | VLSI | FPGA Design | Arduino | Robot Operating System | Swift | SQLite

WORK EXPERIENCE

Artificial Intelligence Intern ***(Twilio, Telecommunications, APIs, Artificial Intelligence)*** **September 2024 – Present**
Winito Inc. | *St. Pete, FL / Remote*

- Creating an AI chatbot capable of conversing over SMS messaging by employing Twilio's chat API.
- Independently designing backend logic, chatbot functionality, integrating APIs and handling A2P 10DLC registration for compliance.

Computer Science Intern ***(Reed-Solomon Encoding, OpenCV, PIL)*** **June 2023 – August 2023**
Atomic Asher LLP | *Mumbai, India*

- Designed and developed a custom QR-like code decoded solely by an individual organization. Encoded using Reed-Solomon encryption.
- Employed PIL and OpenCV to create an application that uses camera functionality to decrypt the code instantly.

Computer Systems Engineering (ECE 391) Course Assistant **August 2023 – May 2024**
University of Illinois, Grainger College of Engineering | *Champaign, Illinois*

- Conducting biweekly office hours to assist people with x86 Assembly, C, embedded C and Linux projects.
- Assisting over 340 students in creating Linux-like operating systems.

Engineering Learning Assistant Team Lead (ENG 100- Engineering Orientation) **August 2022 – December 2023**
University of Illinois, Grainger College of Engineering | *Champaign, Illinois*

- Biweekly guiding and hosting the ECE department's ENG 100 classes of 20+ students to integrate them, and provide advice in personal, academic, and social spheres, as well as providing insight into any queries or adversities.
- Selected to spearhead an international engineering project in collaboration with the University of Pisa in Italy in May 2023.

PROJECTS

Self-Help Mobile Application ***(Swift, SwiftUI, UIKit, Xcode)*** **December 2024 – Present**

- Developing a self-care mobile app using Swift and Xcode as a personal project, with plans to publish on App Store.
- Designing and implementing features for habit tracking, chore reminder notifications, journaling and breathing exercises. Utilizing both SwiftUI and UIKit for user interfaces.

Autonomous Sailboat ***(PCB Design, Soldering, C, KiCad, I2C, Wireless Control, UART, PWMs, Microcontroller, Telemetry)*** **February 2024 – May 2024**

- Constructing a sailboat with the ability to autonomously travel based off information provided by wind vanes, speedometers, compasses, GPS systems and battery management systems.
- Generating PCB schematics and soldering components.
- Analyzing and constructing battery management systems, looking at systemic and implementational tradeoffs to maximize power output.
- Coding a microcontroller in C++ to efficiently react to and autonomously control the boat from inputted data and implementing manual RC control functionality through STM32.

AMD 2901 Chip Synthetization ***(Quartus Altera, Cadence Virtuoso, VLSI, Logic Design, System Verilog)*** **March 2023 – April 2023**

- Designed logic and layouts for a 4-bit ALU at a transistor level, generated a control unit via CAD using System Verilog code.
- Components implemented included register file with Q-registers, core ALU, RAM, MUXes, decoding units based on specifications; analyzed design area and timing prior to implementation.

Linux-based Operating System ***(x86, Embedded C)*** **March 2023 – April 2023**

- Created and implemented a command-line Linux-based operating system working on 32-bit x86 architecture.
- Implemented operating system features such as 4MB paging, file systems, system calls, video memory and scheduling, working with multiple terminal functionalities and scrolling to create a working kernel shell to execute x86 system calls.
- Utilized interrupt packets to synchronize and thread a software controller to a VGA game.

Color-Detecting Robot ***(Python, Robot Operating System)*** **March 2023 – April 2023**

- Utilized robotics forward and inverse kinematic equations to help control a robot's movements and calculate required joint angles to achieve the desired arm position.
- Used cameras and color-detecting functionalities to create programs working with the robot picking up certain colored blocks and placing them in a desired orientation.

Digital Piano Synthesizer ***(Electronics, System Verilog, C, FPGAs, Quartus Altera)*** **November 2022 – December 2022**

- Created a piano on FPGA in System Verilog to play music through keyboard input and display instructions, designed with On-Chip memory.
- Used USB protocol to connect with a keyboard for input, utilized I2S and I2C Protocol to output audio, and used UART Protocol to display.
- Programmed in C to connect with the NIOS-II System-on-Chip and used SPI Protocol to communicate between the several peripherals.

Simple Little-Computer 3 ***(Electronics, System Verilog, FPGAs, Hardware, Breadboard, Quartus Altera, ModelSim)*** **October 2022**

- Implemented the logic and datapath of a 16-bit Microprocessor on FPGA internal registers to execute instruction sequences in System Verilog.
- Circuit constructed the logic and datapath with a 4-bit microprocessor to execute the instruction sequences through LED outputs.
- Learned the architecture and constructed the ALU, Register Control and Routing Units to perform bitwise operations on seven registers.
- Displayed the values on the FPGA Hex Displays, and accepted inputs through switches via SPI Protocol.

Digital Signal Processing Lab Mini Projects ***(Python, Jupyter Notebook)*** **September 2022 – December 2022**

- Constructed an edge-detector in photos along columns and rows through convolution kernels with applications in handwriting recognition.
- Analyzed audio samples through spectrographs and using DTFTs with applications in audio recognition and speech detection.

Relevant Coursework

Senior Design Project Lab | Logic Synthesis | Embedded DSP Laboratory | Algorithms & Models of Computation | Digital Systems Laboratory | Computer Systems Engineering & Programming | Digital and Analog Signal Processing | Data Structures & Algorithms | Discrete Structures | Intro to VLSI | Intro to Robotics | Intro to Computing and Electronics