Aryan Prinjha

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EDUCATION

University of Illinois at Urbana-Champaign **May 2022**
Bachelor of Science, Computer Engineering *Champaign, IL*

- Relevant Coursework: ECE 385 – Digital Systems Laboratory, CS 225 – Introduction to Data Structures and Algorithms, ECE 391 – Computer Systems Engineering (Current), ECE 210 – Analog Signal Processing
- Leadership Certificate Candidate: Issued by the Illinois Leadership Center

WORK EXPERIENCE

ECE 385 – Digital Systems Laboratory **Jan. 2021 – Present**
Undergraduate Assistant *Champaign, IL*

- Assisted students with concepts in FPGA programming, TTL digital systems, System-On-Chip NIOS II soft interface, Datapath design, timing analysis and incorporating said concepts towards a final project
- Added new debugging tools namely Signal Tap, and its corresponding guides, to the course curriculum

PROJECT HIGHLIGHTS

Dungeon Crawler – System Verilog on FPGA Project **Nov. 2020 – Dec. 2020**

- Pair programmed a top-down dungeon explorer game in System Verilog, with 3 distinct maze levels, character animation, character rotation, mob animation, high score, and current score functionality
- Added physics functionality, in particular wall collision detection and character overlap detection
- Wrote a state machine for map transition, high score updating, and player animation and player rotation
- Implemented the standard VGA protocol and USB keyboard protocol using System Verilog and FPGA for I/O

AES 128-bit Encryption – System Verilog on FPGA Project **Oct. 2020 – Nov. 2020**

- Designed and built an AES encryption software module running on NIOS II SoC and an AES decryption accelerator module to accelerate AES operations using the FPGA
- Increased encryption/decryption speeds from 1.4s on NIOS II SoC CPU to 0.023s on the FPGA

Simplified Little Computer 3 (LC-3) – System Verilog on FPGA Project **Sep. 2020 – Oct. 2020**

- Designed and built the Datapath for a Turing complete 16-bit microprocessor based on the LC-3 ISA

Airline.org Database Search – Data Structures & C++ Project **Aug. 2020 – Sep. 2020**

- Utilized the airlines.org dataset to code a shortest path finding program, between two airport locations
- Implemented A* search algorithm, reducing path search time from 1.6s in Dijkstra's algorithm to 1.2s in A*

Concrete Crack Detection Module – Arduino Project **Jan. 2019 – May. 2019**

- Formulated and coded an Ultrasonic sensor-based module to sweep and probe concrete pipes for cracks
- Extended a sensor health circuit to detect data output accuracy at each pass, checking for sensor malfunctions

SKILLS & INTERESTS

- **Skills:** Proficient - System Verilog, FPGA, C++, C, Intel Quartus, Git. Intermediate - JavaScript, and Java
- **Awards:** 2nd Adobe x Amazon Creative Jam Design Competition held in September 2020
- **Interests:** Leadership, Gaming, Robotics, Badminton, Cinematography and Chess