Masaad Khan

Bay Area, California | 2706 Salado St, Austin, TX, 78705
(408) 202-8830 • mak4668@utexas.edu • github.com/mkhan825 • linkedin.com/in/masaad-khan

EDUCATION

The University of Texas at Austin **August 2019 – Present**
B.S., Electrical and Computer Engineering, 3.56/4.00 Overall GPA
Relevant Coursework: Verification of Digital Systems, Computer Architecture, Digital Logic Design, Operating Systems

WORK EXPERIENCE

Intel **May 2022 – August 2022**
Xeon SoC Pre-silicon Verification Intern *Remote*

- Designed the first uploaders for new internal database to standardize platform, compress log files, and decrease regression time
- Converted Perl post-processing checker to Python and migrated large log files to new database to increase checker performance
- Automated System Verilog test bench creation for SoC in different PCI-E configurations; a process which was being done by hand

Tenstorrent **January 2022 – May 2022**
Design Verification Intern – RISC-V CPU Team *Austin, TX*

- Compiled and modified Google's open-source System Verilog *riscv-dv* random instruction generator to create tests
- Constrained tests to help build testbenches for different blocks and ran stimuli on VCS and Whisper to ensure proper behavior
- Migrated Tenstorrent's enhancements of vector, floating point, load/store units - and more - to Google's head commit
- Generated diagrams in React using Python and data from SQL to visualize the RTL interfaces; streamlining testbench generation

Tesla **January 2021 – August 2021**
Silicon Development Intern – Autopilot Hardware Group *Palo Alto, CA*

- Delivered temperature and voltage heartbeat via RTOS task for bringup of newly-received compute die to ensure silicon's stability
- Developed SPI, temperature, voltage interrupts/drivers for third-party IPs, accounted for bug in SPI silicon with SW solution
- Implemented, integrated, and rigorously tested SW architecture designed to send temperature and voltage over the buggy SPI
- Automated sending protobuf requests via .JSON files and synced script to hardware reading protobuf messages from UART
- Created Python script with linux-like commands to build LittleFS QSPI images, unblocking coworkers without sudo

RESEARCH

Wireless Networking and Communications Group - UT Austin **August 2021 – Present**
Undergraduate Researcher *Austin, TX*

- Constructed scriptable Airsim drone simulation environment in Unreal Engine in order to generate images and positional data
- Utilized the environment to create a dataset, which was used to train our model; co-authored a submission to IEEE T-RO
- Developed a simple generic networking protocol with ZeroMQ and Protobuf to be used in different contexts within our lab
- Used networking protocol to research how latency changes on physically-moving hardware; submitting a paper to ICRA
- Benchmarked a variety of ASR, NLP, and other models on Jetson Nano to determine the efficacy of edge computing

PROJECTS

Pintos **August 2021 – December 2021**

- Collaborated in a team of two to expand on x86 operating system; constructed coding guidelines and procedures
- Programmed user processes/protection, virtual memory paging, and allocated sectors/blocks for growable file system using C

Cycle-level Simulation of Pipelined CPU **August 2021 – December 2021**

- Created state machine, u-arch, and ISA support for interrupts, exceptions, virtual memory, and pipelining
- Programmed two-pass assembler, simulator of LC3-B u-arch/ISA in C, and developed framework in Python building simple tests

RGB LED Keyboard with an OLED Screen **December 2019 – Present**

- Familiarized myself with I2C, SPI for rotary-encoders, OLED screens, and shift registers then PWM working with RGB LEDs
- Coded firmware, and a PCB design using Eagle; used Atmega32U4 u-controller OLED screen, shift registers, rotary encoder, USB-C

SKILLS

- **Programming Languages:** System Verilog, Verilog, C, Python, C++, Perl, ARM Thumb/RISC-V Assembly
- **Libraries:** ARM CMSIS RTOS, FreeRTOS, Protobuf, Nanopb, Threading (Python), PySerial, PyFTDI, LittleFS (Python), PyTest
- **Computer Science:** Object Oriented Programming, Data Structures, Machine Learning, Operating Systems
- **Software Applications:** VCS, UVM, Whisper, Vivado, Git, Lauterbach, Linux, MATLAB, KiCad, Autodesk Eagle, Latex