Ziheng Ding

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Education

University of Wisconsin-Madison Madison, WI

Master of Science in Electrical and Computer Engineering *Sep. 2023 – Dec 2024*

Coursework: VLSI Systems Design(ECE 755,Grade A), Introduction to Computer Architecture(ECE 552,Grade A), Embedded Computing Systems(ECE751), Digital Circuits and Components(ECE555)

Hong Kong University of Science and Technology (HKUST) Hong Kong

Bachelor of Science in Computer Engineering *Sep. 2019 – Jun 2023*

Coursework: Embedded Systems, Operating Systems, Signals and Systems,Fundamentals of Artificial Intelligence

Skills

CAD: Verilog, Cadence Virtuoso, CubeMX, Hspice
Design Software: MATLAB, Gem5
Programming Languages: Python, JavaScript, Java, C++, C
Hardware: STM32, Arduino
Software: Node.js, React Native, Android Studio, XGBoost, SOFA4 framework
Database: AWS DynamoDB, Oracle

Projects

Graph Neural Network (GNN) implementation Jan. 2024 – May. 2024

- Implemented and tested a deep neural network (DNN) embedded into a graph in Verilog
- Synthesized the GNN design using Design Compiler and performed automatic place-and-route (APR)
- Exported GDS, imported the GDS to Virtuoso layout to performed DRC/LVS on the final layout of the design
- Contrasted 3 different clock periods and estimated performance based on EDAP metric

Multi-layer Perceptron Design for Human Activity Recognition Sep. 2023 – Dec. 2023

- Conducted schematic design, customized layout, DRC and LVS check.in Virtuoso
- Extracted netlist file using xACT 3D and simulated the design with Hspice
- As a team player, undertook the part of implementing the schematic and layout for a transistor-level XOR gate

Design and implement a processor Jan 2024 – May 2024

- Designed and implemented a 16-bit in ordered pipeline processor with full data forwarding in Verilog,covered arithmetic, memory and branch instructions
- Implemented 2-way set-associative cache on both instruction and data memory
- Supported asynchronous memory access
- Utilized modularized approaches in collaboration with my teammate

Path-search algorithm design Apr 2022 – May 2022

- Designed a bidirectional A* path-searching algorithm to solve the shortest route between two random locations on a 256x256 map with obstacle
- Resolved two agents to avoid collision and the path can be generated within 1 second

Hiking app development Jan. 2023 – May. 2023

- Developed a hiking navigation mobile app,it was Available for most regions in Hong Kong
- Implemented real-time navigation, map display, route planning with Google Map APIs
- Collected data of blackspots where hiking accidents happened before and implemented an alert module for blackspot
- Implemented a user profile system using Amazon AWS and DynamoDB

Research

Wisconsin eLab: Energy Efficient Embedded Exploration May 2024 – Present

Advisor Associate Prof. Umit Yusuf Ogras *Madison, WI*

- Working in the team of designing accelerators for Mamba architecture
- Explored SRAM generator with different technologies and adopted OpenRAM
- Explored on systolic array architecture for synthesizable implementations
- Currently seeking systolic array based approaches of Mamba implementations

Experience

Introducing Computer Science to K-12 Students Jan 2024 – May 2024

EAGLE School *Madison, WI*

- Worked in team, led Computer Science clubs and workshops for K-12 student
- Designed and led activities based on Scratch to help K-12 students learn computational thinking and computer programming

Technical Division of the Industry Technology Dept Jun 2022 – Aug 2022

Ant Yunchuang Digital Technology Co.,Ltd *Beijing, China*

- Developed embedded program template of hotel service with SOFA4 framework