Zhanbo Shen

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Education

Eindhoven University of Technology, the Netherlands September 2022 – Present
M.S. Electrical Engineering (Track: Electronic systems) *GPA:* 7.4/10

- **Courses:** Embedded Computer Architecture, Electronic Design Automation, Intelligent Architecture, Multiprocessors, Neuro Computation, Systems on Silicon

Zhejiang University, China September 2016 – July 2020
B.S. Electrical Engineering and Automation (Track: Motor System and Control) *GPA:* 3.3/4.0

- **Courses:** Signal Analysis and Processing, Modeling and Analysis of Electric Machines and Drives, Power Electronic Technology, Control of Electrical Machinary

Projects

Biosnn | *Python, Xilinx Vitis HLS, Xilinx Vivado* | **NECS Lab, TU/e** July – Oct. 2023

- Design and optimize a novel SCNN (Spiking Convolutional Neural Network) architecture that achieves comparable classification accuracy for genomic images.
- Translate the Python neural network model into Xilinx Vitis HLS language and proceed with debugging and synthesis.
- Implement the neural network onto Pynq board with Xilinx Vivado, achieving high accuracy and throughput with low power consumption

Low power design and synthesis of SOC | *Verilog, Cadence* | **TU/e** May – June 2023

- Design a five-stage pipeline MIPS processor core, AES encryption module, and SOC composed of AMBA bus with Verilog. Use Cadence Incisive for logic synthesis, and Cadence Innovus for place and route.

Neural network optimization and accelerating. | *Python, CUDA, Tensil* | **TU/e** Feb. – April 2023

- Build up a multilayer neural network with Python for MNIST classification.
- Optimizing VGG5 for image classification with quantization and pruning trading off the accuracy and computation requirement.
- Use an open-source tool called Tensil AI to generate tensor computing units (systolic arrays) and compile and run ML models.

Diagnosis Method of Interturn Short Circuit of PMSM | *Matlab, Simulink* | **ZJU** Jan. – July 2020

- Fourier transform and state observer are used to detect and diagnose the interturn short circuit of PMSM, using simulink platform.

Experience

Eindhoven University of Technology | *Research Student* Nov. 2023 – Present

- Focusing on building a reprogrammable hardware for Spiking neural network in Electronic Systems group with Prof. Federico Corradi, Prof. Manil Dev Gomony and Prof. Henk Corporaal.

Eindhoven University of Technology | *Teaching Assistant* Feb. 2024 – Present

- Being a teaching assistant in course Intelligent Architecture.

China Tobacco Zhejiang Industrial Co., Ltd. | *Management Trainee* Aug. 2020 – June 2022

- Supervising and maintaining proper function of the cigarette system, fixing the machinary and electrial errors.

Extracurricular experience

Summer Exchange at Seoul Natinal University and Yonsei University | *Exchange Student* Aug. – Aug. 2018

- Learned the relevant knowledge about power transmission and motor optimization from two famous schools in South Korea

Skills

Languages: C/C++, Python, Xilinx Vitis HLS, LaTeX
Tools: Git/GitHub, Linux, Cadence, Xilinx Vivado