(TRIS) JIAYI TIAN

Email: 191180118@smail.nju.edu.cn | Mobile: 86-15542405069

EDUCATION

Nanjing University **Nanjing, China**
School of Electronic Science and Engineering Sept. 2019- Jul. 2023

- B.Eng., Major in Integrated Circuit Design and Integrated Systems
- **Cumulative GPA: 4.51/5.0; Major GPA: 4.49/5.0 (Top 10% in the grade)**

AWARDS

- National Undergraduate Electronic Design Contest, The 2nd Prize in Jiangsu Province, Nov. 2021(30%)
- National Undergraduate Electronic Design Contest, The 2nd Prize in Jiangsu Province, Oct. 2020(30%)
- People's Scholarship, The 2nd Prize in NJU, Nov. 2020(10%)
- Jinxiao Company Scholarship, Nov. 2021(5%)
- People's Scholarship, The Academic Competition Award, Nov. 2021(5%)

RESEARCH EXPERIENCE

Low-bit Quantization Work of BERT in the NLP Area
Independent Project, Apr. 2021-Sept. 2022

- Used Python and Pytorch to perform low-bit quantization in BERT models and enhance the accuracy
- Read literature on Transformer model compression with *Transformers: Attention is all you need* at the beginning and learned about the Transformer-based BERT model.
- Read literature on model compression methods for BERT, including *Binarybert, Ternarybert, Dynabert, and Tinybert, BiBERT* for further optimization. Studied the data augmentation and distillation methods presented in *Tinybert*, the pruned method in *Dynabert,* and the low-bit quantization principle in *Ternarybert, BinaryBERT and the latest BiBERT*.
- Worked on the assembling of the BinaryBERT and BiBERT model based on *Binary Ensemble Neural Network: More Bits per Network or More Networks per Bit* to improve the performance of binary bit BERT models.
- Give reports biweekly on the project progress at the group meeting in Professor Zhongfeng Wang's research group with his Ph.D. and Master's students.
- **Writing an essay for ICASSP23 nowadays**

INT8 Quantization Work of BERT with Hardware Deployment
Member, Sept. 2021-Dec. 2022

- Used Python and Pytorch to perform INT8 quantization in BERT models
- Used Matlab to achieve BERT models' encoder layer for better understanding the attention mechanism
- Read literature on model compression methods for BERT, including *Q8BERT and IBERT* for latter deploying.
- Now my team is trying to use Verilog to deploy the BERT models' inference process on Hardware
- Give team reports on the project progress in the biweekly team meetings.

National Undergraduate Electronic Design Contests *Oct. 2020- Nov. 2021*
Member, Oct. 2020

- Used Multisim and Altium Designer to simulate and design electronic circuits as well as draw PCBs, designed a triode amplifier circuit with a selection chip for signal processing before MCU's sampling, which could choose to show a normal sine waveform and 4 kinds of waveform with distortion with a certain range.
- Designed an Amplifier Nonlinear Distortion Research Device

Team leader, Nov. 2021

- Used Multisim and Altium Designer to simulate and design electronic circuits as well as draw PCBs, and designed an AGC(automatic gain control) amplifier circuits for signal processing before MCU's sampling.
- Completed a Signal Distortion Measuring Device
- Have completed 4 extra systems during the training for the contest, including an adaptive filtering, a remote amplitude-frequency characteristic measurement instrument, a spectrum analyzer, and a speech-source localization device.

Verilog Design Experiment
Member, Mar. 2021-Jun. 2021

- Used Quartus and Intel Cyclone5 Series' FPGA to conduct Verilog programming, completed a VGA display clock on the monitor which can set time via keyboard
- Responsible for accomplishing the VGA displaying, mainly used RAM and sequential logic analysis for designing, and wrote a report in 17 pages by Latex and got an A+ score

EXTRA-CURRICULAR EXPERIENCE

Student Union in Sch of Elec Sci and Eng., Organization Department
Department Director, Sept. 2020 - Sept. 2021
- In charge of 2020 summer social practice, won "Excellent Organization Award" (20%)
- Won the 2021 “Excellent Department Director” (15%)
- Organized school social practice, volunteer work, and extracurricular activities

School Badminton Association, Activity Department
Vice-chairman, Sept. 2021-Sept. 2022; Minister, Sept. 2020- Sept. 2021
Organized large-scale sports events and contests in NJU, the number of participants is up to hundreds

Women's Volleyball Team
Captain, Sept.2021-Sept. 2022
- Won the 4th prize in the 2019-2020 departmental contest and the 3rd prize in the 2020-2021 departmental contest

Volunteer work
- Achieved the 2021 “Excellent Volunteer Prize”(<1%)
- Achieved the “Excellent Volunteer Prize” on school’s 120th anniversary(<1%)

TECHNICAL SKILLS

- Programming languages: C(3 years), Verilog(2 years), Python(one year), C++(half a year)
- Software skills: Pytorch, Matlab, Vivado, Quartus, Latex, Modelsim, Altium Designer, Multisim
- TOEFL 102