**(Tris) Jiayi Tian**

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**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
* **GPA: 4.50/5.0(Top 15% in the grade)**

**Awards**

* National Undergraduate Electronic Design Contest, The 2nd Prize in Jiangsu Province, Nov. 2021(30%)
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* 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