

# CHEN Shixin

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## EDUCATION BACKGROUND

### • Sept. 2018 – Jun. 2022 Nanjing University (NJU)

- ◆ School of Electronic Science and Engineering, B.S. in Microelectronic Science and Engineering (VLSI Design and System Integration) with a Minor in Computer Science
- ◆ Selected as Member of **Outstanding Engineers Elite Class** (30 places out of 201)
- ◆ GPA: **4.50/5.0 (overall)** Score: **90.0/100**  
Ranking: **10/201 (top 5%)** in the School, **2/35** in the Major
- ◆ **Related Courses**



College Physics I	99	Data Structures and Algorithms	94
College Physics II	92	Electromagnetic Field Theory and Microwave Technology	97
Calculus II	90	Semiconductor Physics and Devices	91
Analog Circuit	91	Fundamentals of Artificial Intelligence	90
Digital System Processing	91	Operating System and Linux Programming	90
Principles of Sensors	97	Advanced Experiments of Information Electronics	93
Digital System Experiments	92	The C Programming Language	90

## HONORS & AWARDS

- **National Scholarship, China Ministry of Education** (Highest honor for undergraduates, ranked first among candidates, 3/203 ) 2019
- **Special Top-Grade Scholarship** (12 awardees, the highest scholar in NJU ) 2021
- National Encouragement Scholarship, China Ministry of Education 2020 & 2021
- Yang Lanyun Leadership Talent Scholarship 2020
- Nanjing University Excellent Student Leader Award 2020
- Social Work Award of People's Scholarship 2019 & 2020
- Scholarship of Sichuan Chamber of Commerce, Jiangsu Province 2019
- Second Prize in Jiangsu College Students Electronic Design Competition 2020

## RESEARCH EXPERIENCE

### ❖ Application and Acceleration of Transformer Model in Computer Vision

Dec. 2020 - Present

- ◆ **Research Assistant, Lab of Integrated Circuits and Intelligent System, NJU**  
Advisor: **Dr. Jun Lin**, Associate Professor
- ◆ Utilized Selective Backprop (SB) algorithm to accelerate Vision Transformer model pretrained on ImageNet and CIFAR-10;
- ◆ Reduced inference, back propagation and fine-tuning time while maintaining the inference accuracy of the original model;
- ◆ Plan to implement and compress the model based on the SB algorithm on the FPGA platform and utilize other strategies like quantization, pruning, sparsity and so on.

❖ **Automatic Vehicle License Plate Recognition Based on Machine Vision**

Mar. 2020 - Aug. 2020

◆ **The IoT Competition Project**

Advisor: **Dr. Naizhuo Jiang**, Senior Engineer

- ◆ Designed an embedded device, which can be attached on a smart car and applied to the task of searching cars in underground parking lots automatically;
  - ◆ Processed images recorded by a camera on the MCU STM407 platform, completed the tasks of target detection, character segmentation, pattern recognition, communication with a smart phone, and route planning based on an infrared sensor.
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❖ **Architecture Design of Accelerating Deep Learning Training Based on FPGA**

Sept. 2019 - Sept. 2020

◆ **National College Student Innovation and Entrepreneurship Project**

Advisor: **Dr. Jun Lin**, Associate Professor

- ◆ Utilized PyTorch to construct the deep neural network and deployed the network on FPGA based on HLS.
  - ◆ Implemented a convolutional neural network applying tiled matrix-matrix multiplication strategy using C language independently. The training time is about 7 times shorter than that on CPU and 1.2 times shorter than that on GPU.
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❖ **Design of Intelligent Tracking Car Based on the MCU MSP430 Platform**

Jul. 2020 - Oct. 2020

◆ **Jiangsu College Students Electronic Design Competition Project**

- ◆ Utilized sensors, motors, and other components to build a smart car;
  - ◆ Enable the car to track, climb and run regularly with interferences under the testing environment during the competition.
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❖ **Design of NJU Emulator, a Virtual Operating System Based on C Language**

Mar. 2021 - Jun. 2021

◆ **Final Project of the Introduction of Computer Systems in NJU.**

- ◆ Implemented a system using C language, including a monitor with debugger, a CPU core supporting x86 instructions, a protection mode, and a memory module with cache.

## SKILLS & LEADERSHIP

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### Computing & Software:

C/C++:		Python:	
Chisel:		Verilog:	
MATLAB:		PyTorch:	

### Leadership Positions:

- Representative of Students' Congress of NJU Jun. 2020 - Present
- Deputy Secretary of Communist Youth League of the School Sept. 2020 - Sept. 2021
- President of the Youth Volunteers Association of the School Sept. 2019 - Sept. 2020