Chenjie Liu

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Introduction

I'm a third-year master student at Nanjing University (NJU), advised by Prof. Zhongfeng Wang. My current research focuses on hardware design and AI, including Approximate Nearest Neighbor Search and Computer Vision. I plan to pursue a Ph.D. after completing my Master's degree in June, 2025.

Education

Nanjing University (GPA=87.0/100)
M.S. in Electronic Engineering, advised by Prof. Zhongfeng Wang (IEEE Fellow), 2022-2025.

Harbin Institute of Technology (GPA=84.816/100)
B.S. in Opto-Electronic Information Science and Engineering, 2018-2022.

Publications

An Efficient FPGA Implementation of Approximate Nearest Neighbor Search, under second-round review.
Yifeng Song*, **Chenjie Liu***, Rongrong Zhang, Danyang Zhu, Zhongfeng Wang. (* **Equal contribution**)
IEEE Transactions on Very Large Scale Integration Systems (**IEEE TVLSI)**

- Implemented an efficient IVF-PQ hardware design for Approximate Nearest Neighbor Search on FPGA.
- Proposed a novel classification-based multi-data input top-k module, capable of simultaneously inserting several entries into the sorted list with flexible bandwidth.
- Developed a quantification method and a balanced resource allocation scheme to improve parallelism and energy consumption, which achieves significant improvements in both speed and hardware resources.

Patent: A Vector Retrieval Device Based on Approximate Nearest Neighbor Search

Projects

A YOLO-based object detection and tracking method of small ship targets
(The 2nd National Information Fusion Competition, 2022, China. Outstanding Prize of the Final.)

- Developed a high-speed YOLO-based object detection method.
- Proposed a targeted optimization for small, blurred targets on the sea surface, with a two-stage classification-detection strategy.

The research and implementation of lightweight object detection methods for embedded systems

- Developed a MobileNet-based object detection method for small vehicle targets in remote sensing images.
- Completed the deployment of the object detection algorithm on NVIDIA Jetson TX2 based on TensorRT, achieving real-time detection of small targets in remote sensing images.

Research on a super-resolution reconstruction algorithm based on multi-frame sequence vehicle images
(Provincial College Students' Innovation Project, 2019-2021. The Second Prize of Heilongjiang Province.)

- Developed a scale-invariant image registration method based on the SURF algorithm.
- Implemented an image reconstruction algorithm based on the maximum a posteriori (MAP) method.

Other Experiences

Teaching Assistant, Electronic Innovation Practice, 2024.
Participated in the founding of PrimeAI Ltd. and held the position of supervisor, 2023-2024.
International exchange student in Far Eastern Federal University (FEFU), 2019.

Awards

Nanjing University Graduate Academic Scholarship, 2022. The First Prize.
Nanjing University Graduate Academic Scholarship, 2023, 2024. The Second Prize.
The People's Scholarship in China, 2021.
The 2nd National Information Fusion Competition, 2022, China. Outstanding Prize of the Final.
Provincial College Students' Innovation Project, 2019-2021. The Second Prize of Heilongjiang Province.
National English Competition for College Students (NECCS), 2019. National Third Prize.

Skills

English Level: IELTS 7.0
Coding: Proficient in Verilog and Python, also with experience in C, MATLAB, etc.

南京大学
NANJING UNIVERSITY

研究生学习成绩表

Transcript of Academic Records

学号： 502022230014	姓名： 刘辰杰	院(系)： 电子科学与工程学院	专业： 物理电子学		
Student ID: 502022230014	Name: Liu Chenjie	School: School of Electronic Science & Engineering	Major: Physical Electronics		
学年学期 Academic	课程类型 Course Type	课程名称 Course Title	学分 Credits	成绩 Grade	
				秋季学期 Fall Semester	春季学期 Spring Semester
第一学年 (2022.9-2023.6) Sept. 2022-Jun. 2023 (1st year)	D类	柔力球 Softball	2.0	88	
	D类	物理学的进化及量子物理突破 Evolution of physics and breakthroughs in quantum physics	2.0	88	
	A类	研究生学术规范与学术诚信 Academic Criterion and Academic Integrity of Graduate Students	0.0	通过 Pass	
	A类	硕士生英语 English courses for Master Candidates	4.0	免修 Exemption	
	D类	电子器件进展 Advances in Electronic Devices	2.0	85	
	A类	新时代中国特色社会主义理论与实践 Theory and practice of socialism with Chinese characteristics in the new era	2.0	89	
	B类	电子信息前沿(上) Frontiers of Electronic Information	1.0	90	
	D类	自旋电子学概论 Spintronics Introduction	2.0	85	
	D类	并行计算 Parallel computation	3.0	92	
	D类	芯片设计与解决方案 Chip design and solution	2.0	89	
	D类	激光物理与应用	2.0		95
	A类	马克思主义经典著作选读 Selected readings of Marxist Classics	1.0		87
	B类	工程伦理 engineering ethics	2.0		83
	D类	数字信号处理的VLSI架构 VLSI DSP architecture	3.0		85
	D类	微波测量（实验） Microwave Measurement (Experiment)	4.0		81
学分累计 Total Credits			32.0		

日期(date)：2024-11-06

地址：中国江苏省南京市栖霞区仙林大道163号 邮编：210023 电话：86-25-89683186
Address:163 Xianlin Avenue, Qixia District, Nanjing, China, 210023 Tel:86-25-89683186

哈爾濱工業大學

HARBIN INSTITUTE OF TECHNOLOGY

Average Grade of Undergraduate Study

本科生成绩平均分

Name: Liu Chenjie 姓 名: 刘辰杰
Student No.: 1181400510 学 号
Graduation Date: 2022 毕业时间
School: School of Astronautics 学院: 航天学院
Major: Optoelectronic Information Science and Engineering 专业: 光电信息科学与工程
Grade Point Average: 84.816 平均学分绩
Average Grade (Arithmetic mean): 83.81 算术平均分
Average Grade (Weighted mean): 84.68 加权平均分

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Arithmetic mean:

算术平均分算法

NOTE: Average Grade = ∑Scores / Number of Courses.

Weighted mean:

加权平均分算法

NOTE: Average Grade = ∑(Credits × Scores)/∑Credits.

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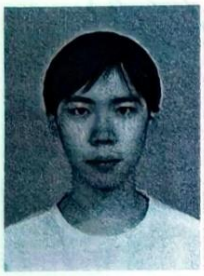
Academic Transcript for Bachelor Study



Name	Liu Chenjie	**Gender**	Male	**Date of Birth**	Oct.8,2000
Student ID	1181400510			**Period of Study**	Aug.,2018～Jun.,2022
School/Department	Astronautics				
Major	Optoelectronic Information Science and Engineering				
Degree	Bachelor of Engineering			**Degree Conferring Date**	Jun.,2022
Graduate Certificate No.	102131202205000509			**Degree Certificate No.**	1021342022000509
Remark	Studied in Far Eastern Federal University Jul. 2019-Aug. 2019				

Term	Course	Hour/ Credit	Score
2018 Fall	Literature Retrieval	12/0.5	81
	Physical Education	32/1.0	74
	Listening and Speaking for TOEFL	32.0/1.5	86.5
	Ideological and Moral Self-cultivation & Fundamentals of Law	32/2.0	93
	College Computer-Introduction to Computing Thinking B	40/2.5	82
	Military Training and Theories	3 weeks /3.0	77
	Inorganic Chemistry B	48/3.0	73
	Linear Algebra and Analytic Geometry B	64/4.0	89.5
	Calculus B(1)	88/5.5	90
	German as Second Foreign Language I	32/2.0	73.5
	Introduction to China's Historical Geography	28/2.0	68
2019 Spring	Inorganic Chemistry Experiment B	24/1.0	81.7
	Experiments in Analytical Chemistry B	24/1.0	78
	Situation and Policy	16/1.0	90
	Physical Education	32/1.0	67
	Analytical Chemistry C	24/1.5	72
	Introduction to English-Speaking Countries	32.0/1.5	94.3
	Compendium of Chinese Contemporary and Modern History	32/2.0	91
	Engineering drawings and CAD foundation	40/2.5	88.6
	Calculus B(2)	88/5.5	83
	College Physics B(1)	88/5.5	78
	Appreciation and Discussion of Selected English Fantasy Movies and Plays	16/1.0	90
2019 Summer	The foundation and application of life science	16/1.0	80.8

Term	Course	Hour/ Credit	Score
2019 Summer	Scientific and Technological Literacy in Chemical Engineering and Chemistry	24/1.5	82
2019 Fall	Physical Education	16/0.5	73
	Introduction to Intercultural Communication	32.0/1.5	89
	College Physics Experiments A(1)	33/1.5	73
	Theoretical Mechanics C	32/2.0	86
	Engineering Training (Metalworking Practice) C	2 weeks /2.0	84
	Electrotechnics B	40/2.5	70.6
	Probability theory and mathematical statistics C	48/3.0	89
	Complex Function and Integral Transformation	48/3.0	68
	Introduction to MaoZeDong Thought and the socialism theory of China characteristics system	64/4.0	87
	College Physics B(2)	64/4.0	90.1
	Introduction to Western Art	16/1.0	88
	Modern World's Political Structure and International Relationships	24/1.5	91
2020 Spring	Physical Education	16/0.5	98
	College Physics Experiments A(2)	27/1.0	90
	Electrician technique experiment	36/1.5	87
	Selected Readings in British Literature	36/1.5	92.2
	Mechanics of materials C	32/2.0	70.5
	Applied Optics	40/2.5	87.4
	Electronics B	40/2.5	85
	Equations of Mathematics and Physics	40/2.5	89
	Physics Optics	48 /3.0	87
	C Programming Language A	48/3.0	95

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HARBIN INSTITUTE OF TECHNOLOGY

Academic Transcript for Bachelor Study

Term	Course	Hour/ Credit	Score
2020 Spring	Basic Principles of Marxist Philosophy	48/3.0	84
	Appreciation of Greek Mythology	24/1.5	67.7
2020 Summer	Cutting-edge Research Lecture	16/1.0	90
	Innovative training course	16/1.0	90
	Survey on the History of World Civilization	16/1.0	93
2020 Fall	Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	16/1.0	78.5
	Infrared Radiation and Metrology	32/2.0	74
	THE BASIC OF INTERCHANGEABILITY AND MEASURMENT TECHNOLOGY A	32/2.0	83
	Fourier Optics	40/2.5	94.3
	Signals and Systems B	48/3.0	71.2
	Principles of Lasers	56/3.5	81.6
	DESIGN FUNDAMENTALS OF PRECISION MACHINERY B	64 /4.0	70
2021 Spring	Innovative Education Course B	16/1.0	88
	Infrared Technology and Systems	24/1.5	77
	Target Detection and Recognition in Imagery	24/1.5	92
	Photoelectric Signals Detection	32/2.0	84
	Engineering Training (Electronic Process Practice)	2 weeks /2.0	87.5
	Optical Instruments and Design A	40/2.5	81
	Photoelectric Testing Technique	40/2.5	86.4
	Opto-Mechanical System Design	40/2.5	85
	Digital Signal Processing	48/3.0	72.2
2021 Summer	Knowledge Practice	1 week /1.0	91
	Production practice	1 week /1.0	90
	Curriculum Design for Optical System CAD	2 weeks /2.0	90
2021 Fall	Thin Film Optics	24/1.5	83
	Photoelectric Image Processing	32/2.0	81.1
	Curriculum Design of Integration of Optics, Mechanics and Electronics	2 weeks /2.0	85
	Lasera Imaging Technology and Application	16/1.0	92
	Computational Imaging	16/1.0	90

Term	Course	Hour/ Credit	Score
2021 Fall	Optical Remote Sensing	24/1.5	92
	Optical Fiber Technique and Application	32/2.0	88
	Business Strategy Management	32/2.0	64
2022 Spring	Physique Health Test	/4.0	Pass
	Graduation Design (Thesis)	15 weeks /15.0	88.5
	Lectures on Cultural Attainment	8 Lec. /1.0	97
	Technology Practice & Training	0/2.0	93

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Grade System	1.percentage scale: 0-100; 2.pass/not pass scale: 60-100,'pass'; lower than 60,'not passed'.
Total credits	182.5

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Official Seal of Harbin Institute of Technology

Date: Aug.20,2024