Xia Zichao

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EDUCATION

Shanghai Jiao Tong University

School of Electronic Information and Electrical Engineering: **Computers and big data technologies** **Master**
(GPA 3.4/4.0, Weighted grade 85.0) Sept/2022 – Mar/2025

School of Electronic Information and Electrical Engineering: **Information Security** **Bachelor**
(GPA 3.5/4.3, Weighted grade 84.7, Ranking 50%**)** Sept/2017 – Jun/2022

- *Awards:* B Scholarship of Shanghai Jiao Tong University 2018, (TOP 10%)
  C Scholarship of Shanghai Jiao Tong University 2019 & 2021, (TOP 23%, 25%)
  Second Prize in the 14th National College Student Information Security Contest
  Bronze Award of the 13th "Challenge Cup" Entrepreneurship Plan Competition
  Outstanding graduate of Shanghai Jiao Tong University
- *Publication:*
  1. Zichao Xia*, Yuting Chen, Pengbo Nie and Zihan Wang. Detecting and Diagnosing Compiler-Introduced Numerical Deviations in Neural Network Models.*
  International Symposium on Software Reliability Engineering (ISSRE), 2024. [CORE-A, CCF-B]
  2. Zichao Xia*, Fangqi Li, Shilin Wang and Xinlong Pan. Elevating the Defensive Capability of Sequential Recommendation Model by Using Long-Term Knowledge. (committed to AI conference)*
- *Computer Skill:* C/C++, Python, PyTorch, TensorFlow, MySQL, Protobuf, Googletest.
- *Major course:* Calculus II (90). Mathematic Fundamentals of Information Security (91).
- *Patents:* A trusted Recommendation system for stream information, granted. (As the first inventor)
  An oscillating tidal energy generation device, granted. (As the first inventor)
  A corpus construction and filtering method and system, published, (As the second inventor)

RESEARCH EXPERIENCE

[MLSys] Optimal tiling configuration search technique, *Group member* Mar/2024 – Jul/2024

- This project investigates a computational graph acceleration technology that can automatically adapt various user codes to the backend GPU. It comprises three techniques: model abstraction, input range segmentation via a sliding window, and optimal configuration search. The result shows that our technique set the hardware parameters more efficiently, reducing conflicts among multiple threads during memory access, which leads to higher degrees of parallelism. The execution speed of subgraphs increases by an average of 22%, with the maximum boost reaching 580%.

[SE] Finding numerical error introduced by deep learning compilers, *Head* Feb/2023 – Jan/2024

- This study identifies the compiler-introduced numerical deviation in neural network models and realize the difficulty of detecting and diagnosing the deviations. We propose TracNe to detect and diagnose DLC numerical deviations. It is composed of (1) a MEGA search method of generating error-triggering inputs, and (2) a semantic-based exact match algorithm for tracing DLC numerical deviations and locating root causes. The evaluation on two benchmarks shows that our approach is useful, and can serve as a unit test for detecting and isolating the numerical deviations in the DL compiler.

[AI] Defense on recommendation model, *Group Leader* Jan/2021 – Jun/2021

- This study focuses on model security of the commercial recommendation system. I am devoted to revealing vulnerabilities of recommendation models and then propose an effective powerful method which has been proved to perform better than the earlier work on several defensive metrics.

[AI] Malware detection on millions of data, *Group Leader* Mar/2020 – Sept/2020

- This study uses a novel method to solve zero-day attacks which pose a serious challenge to signature-based malware detection methods. We develop a malware detection method by combining access relationships and the Markov chain. The method improves the recall of malicious files to 97%.

PROJECTS

[MLSys] Internship in Alibaba HALO group, *Group member* May/2022 – Sept/2022

- To speedup recommendation model inference and obtain higher efficiency on the hardware platform, we add a subgraph fusion optimization to the Alibaba's Halo compiler, which integrates 4 different types of neighboring computing operations into one kernel. This pass along with cutlass optimization improves inference by 18.3% than TVM.

[EE] Practice of Ocean Engineering, *Group Leader* Mar/2019 – Aug/2019

- To harvest tidal energy more efficiently and environmentally friendly, we design a reliable oscillating wing tidal energy generator. I reduce the problem of deadlocks encountered in the tidy energy acquisition device to a typical physical problem and use a transmission mechanism to replace the electrical control hydrofoil. This simplification decreases the energy consumption in the acquisition process.

STUDENT WORK AND PRACTICE

Students debate team of School of Design, *member* Mar/2018 – Jun/2018

Rong Chang Chu Cai Training Camp, *member* May/2018 – Jul/2021

- As one organizer, I participate in the research of promoting the family doctor system in a rural area. We collect related information extensively in the field and then give the local government exact statistics and detailed reports. The practice wins the special prize in Shanghai College Practice Competition.

OTHERS

- **Volunteer:** International Marathon volunteers in Shanghai, community volunteers, etc.
- **Language:** CET6, TOEFL
- **GitHub:** https://github.com/hxzd5568

UNDERGRADUATE TRANSCRIPT

NAME	Xia Zichao	GENDER	Male		
STUID	517202910019	CLASS	F1803602		
COLLEGE	School of Electronic Information and Electrical Engineering	MAJOR	Information Security	MINOR	Mathematics &amp; Applied Mathematics

ACADEMIC YEAR:2017-2018

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
AD102	Drawing I	4	A+	1	major
AD106	Introduction to Design	2	A-	1	major
AD110	Design History	1	A	1	major
BI001	Introduction to Life Science	2	A	1	major
EN061	College English I	3	B-	1	major
ID112	Design Workshop I	1	A	1	major
MA078	Calculus I	4	B+	1	major
PE001	Physical Education I	1	A	1	major
TH020	Circumstance and Policy	0.5	B+	1	major
TH021	Modern Chinese History	2	A	1	major
AD104	Coloring I	4	A+	2	major
AD117	Method of Design	2	A-	2	major
AD118	Preliminary Form Design	4	A-	2	major

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
AD119	Design Expression	4	B-	2	major
DR102	Open Source and Creative Prototyping	4	A-	2	major
EN062	College English II	3	B-	2	major
MA079	Calculus II	4	B-	2	major
ME122	Manufacturing Practice B	2	B+	2	major
PE002	Physical Education II	1	B+	2	major
PH005	Physics	4	A-	2	major
SP084	Natural Gas Development and Forecast	1	A	2	major
TH000	Cultivation of Ethics and Fundamentals of Law	3	A	2	major
TH004	Military Theory	1	A	2	major
TH010	Military Training	3	P	2	major
TH020	Circumstance and Policy	0.5	A-	2	major
XP004	Social Cognitive Practice in the New Era	2	P	2	major

ACADEMIC YEAR:2018-2019

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
CA001	General Chemistry	2	A-	1	major
CA044	College Chemistry Lab	1	A	1	major
CA904	The Chemical Problems in the Public Crisis Events	2	A-	1	major
CS154	Thinking and Approach of Programming	3	A	1	major
EN908	Academic Communication in English	2	A	1	major
MA077	Linear Algebra	3	B+	1	major
MA119	Probability and Statistics	3	B+	1	major
PE003	Physical Education III	1	A-	1	major
PI913	The History of Western Philosophy	3	A	1	major
TH007	Basic Theory of Marxism	3	A	1	major
TH020	Circumstance and Policy	0.5	A	1	major

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
EI203	Fundamental Circuit Theory	4	B+	2	major
EI204	Basic Circuit Lab.	2	A-	2	major
EI901	Science and Technology Innovation (Part 1)	2	A-	2	major
MA081	Calculus II	4	C	2	major
ME116	Introduction to Engineering	3	A	2	major
ME210	Engineering Practice	3	A-	2	major
PH001	Physics I	4	B	2	major
PH028	Physics Lab. I	1	A-	2	major
PU917	Classic Readings in Political Economy	3	A-	2	major
TH020	Circumstance and Policy	0.5	A	2	major
TH029	Introduction to Mao Zedong's Thoughts and Theoretical System of Socialism with Chinese Characteristics	3	B+	2	major

ACADEMIC YEAR:2019-2020

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
CS149	Data Structure	3.0	C+	1	major
EE221	Electronics Laboratory	2.0	B+	1	major
EI242	Fundamental of Analog Circuits	2.0	B	1	major
EI243	Digital Electronics	2.0	A	1	major
EM215	Theoretical Mechanics	4.0	B+	1	major
MA097	Mathematical Methods in Physics	3	△F	1	major
MA238	Discrete Mathematics	3.0	B+	1	major
PH002	University Physics (A) II	4.0	B-	1	major
PH029	University Physics Experiments II	1.0	B+	1	major
EI210	Signals and Systems(B)	3.0	B+	2	major

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
IS102	Introduction to Network information Security	2.0	B+	2	major
IS201	Mathematic Fundamentals of Information Security I	3.0	A	2	major
IS214	Principles of Database	2.0	B+	2	major
IS226	Computer Organization and Architecture	2.0	A	2	major
MA097	Mathematical Methods in Physics	3.0	B	2	major
MA249	Calculus II	4	A	2	major
MA425	Real Analysis	3	W	2	minor
PE004	Physical Education IV	1.0	A+	2	major
SE407	Software Engineering	1.0	A	2	major

ACADEMIC YEAR:2020-2021

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
IP012	Participation in Research Program	2	B+	1	major
IS203	Compiler Principles	3.0	B-	1	major
IS205	Information Theory and Coding	2.0	B	1	major
IS210	Digital Signal Processing	3.0	B	1	major
IS301	Computer Communication and Network	3.0	B+	1	major
IS304	Innovation of Science and Technology on Information Security	2.0	A-	1	major
IS315	Mathematic Fundamentals of Information Security II	2.0	A	1	major
IS316	Digital System Design	2.0	A-	1	major
IP044	National Undergraduate Innovation Program	4	B+	2	major
IS206	Operating System	3.0	A-	2	major

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
IS209	FPGA Lab.	2.0	B+	2	major
IS217	Principles of Computer Virus	2.0	A+	2	major
IS222	Principles and Applications of Embedded System	2.0	A	2	major
IS305	Course Design on Application Software	2.0	A-	2	major
IS401	Mobile Communications	2.0	A	2	major
IS405	Windows Security Theory And Technique	2.0	A	2	major
IS407	Modern Cryptography	2.0	A	2	major
IS497	Information Security Practice	3.0	A	2	major
IS306	Professional Practice(Information Security)	2.0	A	3	major

ACADEMIC YEAR:2021-2022

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
IS300	Internet security protocols and related analysis	2.0	B+	1	major
IS412	Theory and Application of Content Security	2.0	B+	1	major

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
IS415	Development practice for system software	2.0	A	1	major
BS470	Undergraduate Project (Thesis)(Information Security)	4.0	B+	2	major

ACADEMIC YEAR:2022-2023

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE
ENT5304	National College Students' Innovation and Entrepreneurship Training Program（IV）	4	P	2	major

CODE	COURSES	CREDIT	GRADECODE	SEMESTER	TYPE

NOTE1-MARK"△"Means the Course Failed NOTE2-MARK"↗"Means Credit Transfer Course   NOTE3-P(Pass)F(Fail) NOTE4-MARK “W"Means The course has been withdrawn   NOTE5-The sheet should be stamped to be official

Semester 1 means fall semester Semester 2 means spring semester

Semester 3 means summer semester

Registar:
Registration & Students'Affairs Center
Shanghai Jiao Tong University
http://jwc.sjtu.edu.cn
2024/09/23