

# JIAXIN LU

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## 🎓 EDUCATION

### Shanghai Jiao Tong University

Bachelor of Computer Science, ACM Honors Class

Shanghai, China

September 2018 - July 2022

- **ACM Honors Class** is an elite CS program for students ranked in the top 5% of the school.
- Advisors: **Prof. Junchi Yan** and **Prof. Yong Yu**.

## 🧑‍🔬 RESEARCH EXPERIENCE

### Department of Computer Science, University of Texas at Austin

Research Intern, Advised by **Prof. Qixing Huang**

Texas, U.S.A.

May 2021 - Present

- **Learning Based Conformal Parameterization**
  - Proposed an edge based conformal parameterization method for closed surface.
  - Introduce cuts on surfaces and apply the the parameterization method on surfaces with cuts.
  - Build an end-to-end learning framework for computing conformal parameterizations of surfaces.
  - One paper is planned to submit to *SIGGRAPH 2022*.

### ThinkLab, Shanghai Jiao Tong University

Undergraduate Researcher, Advised by **Prof. Junchi Yan**

Shanghai, China

July 2020 - Present

- **Joint Graph Matching and Clustering**
  - Propose an efficient Majorization Minimization style algorithm M3C that iteratively tackling graph matching and clustering problem.
  - Based on M3C proposed, developed an unsupervised learning model UM3C with devised edge-wise affinity learning and pseudo label selection techniques.
  - Surpassed the state-of-the-art methods in both accuracy and efficiency.
  - Submitted a paper to *CVPR 2022* as the first author.
- **Robust Partial Graph Matching**
  - Analyzed the partial matching problem under a multi-graph matching perspective and revealed other methods' limitations on partial matching problem.
  - Proposed an end-to-end learning pipeline, designed two novel loss functions, and improved the pair matching solver by introducing the concept of 'universe'.
  - Our method significantly outperforms state-of-the-art on several real-world datasets. It showed high robustness dealing with several complex extension cases and notably improved time and space efficiency.
  - Submitted a paper to *T-PAMI* as one of the first authors.
- **Deep Learning Graph Matching**
  - Proposed an EdgeNet to devise a better geometry of the graph in graph matching.
  - Designed a contrastive learning scheme for deep learning graph matching which obtain better pretrained feature.
  - Both methods help the solver and learning methods to achieve a better performance on several real-world datasets.

## </> SELECT PROJECTS

🔒 Adversarial Attack and Defense Based on Data Mixup

Fall 2020

- Worked in group to explore the effectiveness of Mixup and Adversarial Training on model robustness.
- Implemented several techniques and different mixup policies to improve the robustness of the model and its accuracy on clean data.

### **Mx\* Compiler**

*Spring 2020*

- A compiler implemented in Java, from Mx\* (a C-and-Java-like language) to RISC-V assembly language.
- Implemented effective optimization algorithms which made its performance better than GCC O1 and passed the strongest baseline in this course.

### **Pintos**

*Spring 2020*

- Worked in group to implement Pintos, a simple operating system framework for the 80x86 architecture.
- Implemented threads, user program, virtual memory, file system and support ELF sharing on virtual memory and file system.
- Our group achieved the top grade of this project.

### **RISCV CPU**

*Fall 2019*

- Designed and implemented a FPGA-supported RISC-V CPU with standard 5-stage pipeline in Verilog HDL.
- Optimization with efficient algorithms and architectures.
- Fastest CPU ran on FPGA at 100MHz of this project.

### **Machine Learning System**

*Summer 2019*

- Implemented a subset of Tensorflow in Python and C++ which supports standard logistic regression and CNN.
- Implemented some GPU kernels for the machine learning system.

## **SELECTED AWARDS AND HONORS**

- |   |                         |
|---|-------------------------|
| • Shanghai Scholarship  | <i>2021</i>             |
| • Zhiyuan Honor Scholarship (Top 2% in Shanghai Jiao Tong University) | <i>2018, 2019, 2020</i> |
| • Academic Excellence Scholarship                                     | <i>2019, 2020</i>       |
| • Zhiyuan Leadership Scholarship                                      | <i>2019</i>             |
| • <b>Rank 3rd</b> in CCPC WFINAL.                                     | <i>May 2017</i>         |

## **TEACHING EXPERIENCE**

### **Teaching Assistant of CS151: C++ Programming (Honor)**

*Fall 2020*

- Designed and prepared for the course assignments and projects on OOP.

### **Teaching Assistant of CS151: C++ Programming (Honor)**

*Fall 2019*

- Gave lectures on algorithms and programming problems for students and prepare the course exams.

## **COMPUTER AND LANGUAGE SKILLS**

- **Programming Language:** Proficient in C++, Python, Java, MATLAB, and Verilog HDL.
- **Deep Learning Libraries:** Proficient in popular deep learning libraries such as Pytorch and Tensorflow.
- **Language:** Mandarin (native), English (fluent).

## **EXTRA-CURRICULAR**

- Runner and editor of WeChat official account ACMClass2018.
- Member of student organizing team of ACM-Class Student Academic Festival 2021.
- Member of student group 800 Movie Theater.