JIAXIN LU

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Shanghai Jiao Tong University, P.R. China

Education

Shanghai Jiao Tong University **Shanghai, China**
Bachelor of Computer Science, ACM Honors Class *September 2018 - July 2022*

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

Publication

1. Jiaxin Lu, Zetian Jiang, Tianzhe Wang and Junchi Yan "Joint Graph Matching and Clustering with Majorization-minimization Optimization and Edge-enhanced Unsupervised Learning", Under Review, *CVPR 2022*

2. Zetian Jiang*, Jiaxin Lu*, Tianzhe Wang and Junchi Yan "Learning Universe Model for Partial Matching Networks over Multiple Graphs", Under Review, *T-PAMI*

** denotes equal contribution*

Research Experience

Department of Computer Science, University of Texas at Austin **Texas, U.S.A.**
Research Intern, Advised by **Professor Qixing Huang** *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 **Shanghai, China**
Undergraduate Researcher, Advised by **Prof. Junchi Yan** *July 2020 - Present*

- **Joint Graph Matching and Clustering**
  - Proposed an efficient Majorization Minimization style algorithm M3C to solve graph matching problem under mixture of graph modes.
  - 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**
  - To handle graph matching under mass outliers, analyzed the partial matching problem under a multi-graph matching perspective and revealed other methods' limitations.
  - Proposed an end-to-end learning pipeline including universe metric learning scheme and outlier-aware loss.
  - Our method UPM significantly outperforms state-of-the-art on several real-world datasets. It shows high robustness dealing with several complex extension cases and notably improves time and space efficiency.
  - Submitted a paper to *T-PAMI* as a joint first author.
- **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 models to achieve a better performance on several real-world datasets.

Select Projects

Adversarial Attack and Defense Based on Data Mixup *Fall 2020*

- Worked in a 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*

- Created 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 (Top 0.2% in Shanghai) *2021*
- Zhiyuan Honor Scholarship (Top 2% in Shanghai Jiao Tong University) *2018, 2019, 2020*
- Academic Excellence Scholarship (Top 5% in Shanghai Jiao Tong University) *2019, 2020, 2021*
- Zhiyuan Leadership Scholarship (Awarded for leadership in public service) *2019*
- **Rank 3rd** in CCPC WFINAL (Out of 85 teams) *May 2017*

Teaching Experience

Teaching Assistant of CS151: C++ Programming (Honor) *Fall 2020*

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

Teaching Assistant of CS151: C++ Programming (Honor) *Fall 2019*

- Gave lectures on algorithms and programming problems for undergraduates 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 Pytorch and Tensorflow.
- **Language:** Mandarin (native), English (fluent).

Extra-Curricular Activities

- Run and edit WeChat official account ACMClass2018.
- Member of student organizing team of ACM-Class Student Academic Festival 2021.
- Member of student group 800 Movie Theater.
- Mentor of 'TEACH GIRLS CODING' program which aims to encourage more girls to enter the technology industry.