JIAXIN LU

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Shanghai Jiao Tong University, Shanghai, P.R. China

Education

Shanghai Jiao Tong University **Shanghai, China**
Bachelor of Computer Science, ACM Honors Class *September 2018 - June 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.
  - The resulting paper is being 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.
  - Developed an unsupervised learning model UM3C with devised edge-wise affinity learning and pseudo label selection techniques which has 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 to handle graph matching under mass outliers, and revealed other methods' limitations on distinguishing unmatched inliers.
  - Proposed an end-to-end learning pipeline including universe metric learning scheme and outlier-aware loss.
  - Our method significantly outperforms state-of-the-art on real-world datasets, showing high robustness dealing with different 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 for matching and support to improve the geometry of graphs.
  - Both methods serve as a universal solution to help the matching solver and learning models to achieve a better performance on 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 techniques including soft labeling and different mixup policies to improve the robustness of the model and its accuracy on both attacked data and clean data.

Mx* Compiler *Spring 2020*

- Created a compiler in Java from scratch, which compiles Mx* (a C-and-Java-like language) to RISC-V assembly language.
- Implemented effective optimization algorithms, including graph coloring register allocator, dead code elimination, function inline, and sparse conditional constant propagation, 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.

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, C++ Programming (Honor) (SJTU CS151) *Fall 2020*

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

Teaching Assistant, C++ Programming (Honor) (SJTU CS151) *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.