Junwei Su (苏骏炜)

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Personal Summary

I graduated with dual majors in **Computer Science and Pure Mathematics**, maintaining a near-perfect GPA and earning prestigious scholarships from both my university and the government. I have led and contributed to multiple cutting-edge projects in Canada and Hong Kong, overseeing them from inception to completion. I have authored over **20 papers, with most as the first or corresponding author**, published in top-tier conferences such as ICML, ICLR, KDD, EuroSys, VLDB, AAAI, and a perfect-score paper at ECCV. Additionally, I actively serve as reviewers and area chair for leading conferences like ICML, ICLR, AISTAT, NeurIPS, and KDD, as well as esteemed journals including TNET, TKDE, and TNNLS. I speak and write fluently in **Cantonese, English and Mandarin.**

Education Background

University of Hong Kong — Hong Kong
Computer Science Doctor Faculty of Engineer — Sep 2021 - Sep 2024
HKU Presidential Scholarship
HKPFS(Hong Kong PhD Fellowship Scheme)

University of Toronto — Toronto
Computer Science Master — Sep 2018 - May 2021
GPA: 4.0/4.0, University Fellowship

University of British Columbia — Vancouver
Computer Engineering and Pure Math Bachelor — Sep 2014 - May 2018
GPA:3.9/4.0(Top 5%), Outstanding Engeering Student Award, Academic Excellent Award, Undergraduate Research Award

Reference

- Chuan Wu, IEEE Fellow, ACM Distinguished Member, Professor at The University of Hong Kong, Relation: PhD Advisor, Email: cwu@cs.hku.hk
- Peter Marbach, Professor at The University of Toronto, Relation: MSc Advisor, Email: marbach@cs.toronto.edu
- Sathish Gopalakrishnan, Professor at the University of British Columbia, Relation: Undergraduate Advisor, Email: sathish@ece.ubc.ca

Papers

†: corresponding authors, ∗: equal contribution, [J]: journal

Graph Learning Algorithm, Theory and Application

Junwei Su, Difan Zou, Chuan Wu "PRES: Toward Scalable Memory-Based Dynamic Graph Neural Networks" Proceeding of ICLR 2024

Junwei Su, Chuan Wu "On the Topology Awareness and Generalization Performance of Graph Neural Networks" Proceeding of ECCV 24 (Oral, Best Paper Candidates, Perfect Scores)

Junwei Su, Shan Wu "Temporal-Aware Evaluation and Learning for Temporal Graph Neural Networks" Proceeding of AAAI 2025

Junwei Su, Shan Wu, Jinhui Li "MTRGL: Effective Temporal Correlation Discerning through Multi-modal Temporal Relational Graph Learning" Proceeding of ICASSP 2024

Junwei Su∗, Lingjun Mao∗, Chuan Wu "BG-HGNN: Toward Scalable and Efficient Heterogeneous Graph Neural Network" Preprint, Under Review

Tianzuo Qin, **Junwei Su**, and Chuan Wu "HEGformer: Representation Learning on Heterogeneous Graph Neural Network with Efficient Transformer" Proceeding of ICKG 2024

Mengfan Liu, Da Zheng, **Junwei Su** and Chuan Wu "Full-Graph vs. Mini-Batch Training: Comprehensive Analysis from a Batch Size and Fan-Out Size Perspective" Preprint, Under Review

Continual and Life-Long Learning

Junwei Su, Difan Zou, Zhang Zijun, Chuan Wu "Towards Robust Graph Incremental Learning on Evolving Graphs" Proceeding of ICML 2023

Junwei Su, Difan Zou, Chuan Wu "On the Limitation and Experience Replay for GNNs in Continual Learning" Proceeding of CoLLAs 2024

Learning and Optimization Theory

Junwei Su, Difan Zou, Chuan Wu "Improving Implicit Regularization of SGD with Preconditioning for Least Square Problems" Proceeding of ICLR 2024 BGPT Workshop. Under submission to SIMODS (Revision)

Junwei Su, Chuan Wu "On the Interplay between Graph Structure and Learning Algorithms in Graph Neural Networks" Proceeding of ICML 2025

Dechen Zhang, Junwei Su, Difan Zou "Learning under Quantization for High-Dimensional Linear Regression" Preprint, Under Review

Score-Based Generative Model Theory and Algorithm

Junwei Su, Chuan Wu "A Non-Asymptotic Convergence Analysis for Scored-Based Graph Generative Models via a System of Stochastic Differential Equations" Proceeding of ICML 2025

Junwei Su, Shan Wu "SBGD: Efficient and Scalable Graph Diffusion Generative Model via Block Decomposition" Proceeding of ICML 2025

Network Modelling and Measure

Junwei Su, Peter Marbach "Structure of Core-Periphery Communities" Proceeding of COMPLEX NETWORKS 2022

Junwei Su, Peter Marbach "Structural Properties of Core-Periphery Communities" [J] Advances in Complex Systems 2024

Junwei Su, Peter Marbach "The Role of Social Support and Influencers in Content Markets" [J] Transactions on Economic and Computation

Large Language Model

Da Zheng, Lun Du, **Junwei Su**, Yuchen Tian, Yuqi Zhu, Jintian Zhang, Lanning Wei, Ningyu Zhang, Huajun Chen "Knowledge Augmented Complex Problem Solving with Large Language Models: A Survey" Preprint, Under Review

Machine Learning System

Hanpeng Hu, **Junwei Su†(corresponding)**, Juntao Zhao, Chuan Wu, Yanghua Peng, Yibo Zhu, Haibin Lin "CDMPP: A Device-Model Agnostic Framework for Tensor Program Latency Prediction" Proceeding of EuroSys 2024

Guangming Sheng, **Junwei Su†(corresponding)**, Huang Chao, Chuan Wu "MSPipe: Efficient Temporal GNN Training via Staleness-aware Pipeline" Proceeding of KDD 2024

Yuchen Zhong, **Junwei Su†(corresponding)**, Chuan Wu, Minjie Wang "Heta: Distributed Training of Heterogeneous Graph Neural Networks" Proceeding of VLDB 2025

Yuchen Zhong, **Junwei Su**, Guangming Sheng, Tianzuo Qin, Minjie Wang, Quan Gan, Chuan Wu "GNNUpdater: Adaptive Self-Triggered Training Framework for Continual Graph Learning" Preprint, Under Review

Research Projects

Graph Learning Algorithms, Theory and Systems (PhD Research) — University of Hong Kong

Sep 2018 - Present

Directed the development and design of scalable and robust graph learning algorithms and systems, with a focus on Graph Neural Networks (GNNs). This ongoing project has made significant advancements in the following areas:

- Generalization and learning dynamic of GNNs in different Paradigms
- Efficient and robust graph learning algorithms and architecture design
- Efficient and robust graph learning training system
- Theoretical understanding of deep graph generation method

Online Social Network Modelling (Master Research) — University of Toronto

Sep 2017 - Apr 2018

Conducted research under the supervision of Professor Marbach to analyze the efficiency and structure of content distribution in online social network communities. Formalized the concept of community and motivated community structure to gain a deeper understanding of information networks. Our findings were instrumental in advancing tasks such as community detection and identifying influential users.

- Research and Analysis: Developed a game theoretic framework to model users' decisions on content sharing within a community by combining game theory and optimization theory.

Work Experience

University of Toronto & University of British Columbia & University of Hong Kong

Teaching Assistant — Sep 2015 - Present

- Technical Communication: instructed tutorials for courses including: software engineering, algorithms and data structures, operating systems, linear algebra and calculus

Canada BC Province Children Hospital

Junior Data Analyst Intern — Apr 2017 - Sep 2017

My role was to assist on a DNA modeling project which tried to develop a probabilistic model for implementing efficient DNA sequence alignment algorithm. During my time there, the project secured *3 million funding* and my contribution was the following.

- Data Query: studied and researched different interface of DNA database, and queried about 50Gb DNA data for the project.
- Data Base Design: designed a *SQL database* for storing the DNA data, which provide fast and easy data access for the group.
- Algorithm Implementation: studied and implemented some existing DNA sequency alignment algorithm, which gave the project performance a benchmark

Professional Services

Reviewer/Area Chair

- **Conference**: Neurips, ICLR, ICML, AAAI, KDD, ECAI, AISTATS, CIKM
- **Journal**: TNET, TKDE, TKDD, TNNLS, PR