Xinshi CHEN

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EDUCATION

Georgia Institution of Technology 2017-present

Ph.D. in Machine Learning

- Thesis Supervisor: Prof. Le Song
- Sponsored by Google PhD Fellowship

Chinese University of Hong Kong 2015-2017

M.Phil.(Master of Philosophy) in Mathematics

- Thesis Supervisor: Prof. Eric Tsz Shun CHUNG
- Awarded the Postgraduate Studentship for 24 months
- Thesis: Parametric FEM for Shape Optimization [arxiv]

Chinese University of Hong Kong 2011-2015

Bachelor of Science, Mathematics

- College Head's list - for outstanding academic performance in the year 2013/14
- Professor Charles K. Kao Research Scholarship in 2013/14
- Attended **ETH Zurich, Switzerland** as an exchange student for one semester
- Ranked Top 0.1% among 300,000 science students in the National College Entrance Exam

PUBLICATION

Conference & Journal

1. **Provable Learning-based Algorithm For Sparse Recovery**
   Xinshi Chen, Haoran Sun, Le Song
   *International Conference on Learning Representations (**ICLR**) 2022* [paper]

2. **Multi-task Learning of Order-Consistent Causal Graphs**
   Xinshi Chen, Haoran Sun, Caleb Ellington, Eric Xing, Le Song
   *Advances in Neural Information Processing Systems (**NeurIPS**) 2021* [paper|github|video|slides]

3. **Understanding Deep Architectures With Reasoning Layer**
   Xinshi Chen, Yufei Zhang, Christoph Reisinger, Le Song
   *Advances in Neural Information Processing Systems (**NeurIPS**) 2020* [paper|github|video|slides]

4. **Learning To Stop While Learning To Predict**
   Xinshi Chen, Hanjun Dai, Yu Li, Xin Gao, Le Song
   *International Conference on Machine Learning (**ICML**) 2020* [paper|github|video|slides]

5. **GLAD: Learning Sparse Graph Recovery**
   Harsh Shrivastava, Xinshi Chen, Binghong Chen, Guanghui Lan, Srinvas Aluru, Le Song
   *International Conference on Learning Representations (**ICLR**) 2020* [paper|github|video]

6. **RNA Secondary Structure Prediction By Learning Unrolled Algorithms**
   Xinshi Chen*, Yu Li*, Ramzan Umarov, Xin Gao, Le Song (*equal contribution)
   *International Conference on Learning Representations (**ICLR**) 2020*, **Oral** [paper|github|video]

7. **Efficient Probabilistic Logic Reasoning with Graph Neural Networks**
   Yuyu Zhang, Xinshi Chen, Yuan Yang, Arun Ramamurthy, Bo Li, Yuan Qi, Le Song
   *International Conference on Learning Representations (**ICLR**) 2020* [paper|github|video]

8. **Generative Adversarial User Model for Reinforcement Learning Based Recommendation System**
   Xinshi Chen, Shuang Li, Hui Li, Shaohua Jiang, Yuan Qi, Le Song
   *International Conference on Machine Learning (**ICML**) 2019* [paper|github|video|slides|poster]

9. **Particle Flow Bayes' Rule**
   Xinshi Chen*, Hanjun Dai*, Le Song (*equal contribution)
   *International Conference on Machine Learning (**ICML**) 2019* [paper|github|video|slides|poster]

10. **A distinct class of vesicles derived from the trans-Golgi mediates secretion of xylogalacturonan in the root border cell**
    Pengfei Wang, Xinshi Chen, Cameron Goldbeck, Eric Chung, Byung-Ho Kang
    The Plant Journal 2017 [paper]

Preprints & Workshop

1. **Efficient Dynamic Graph Representation Learning at Scale**
   Xinshi Chen, Yan Zhu, Haowen Xu, Mengyang Liu, Liang Xiong, Muhan Zhang, Le Song
   Arxiv Preprint 2021 [paper]
2. **A Framework For Differentiable Discovery Of Graph Algorithms**
   Hanjun Dai, Xinshi Chen, Yu Li, Xin Gao, Le Song
   NeurIPS 2020 Workshop in Learning Meets Combinatorial Algorithms, **Oral** [paper]
3. **Can Graph Neural Networks Help Logic Reasoning?**
   Yuyu Zhang*, Xinshi Chen*, Yuan Yang*, Arun Ramamurthy, Bo Li, Yuan Qi, Le Song
   NeurIPS 2019 Workshop in KR2ML [paper]
4. **Review: Ordinary Differential Equations For Deep Learning**
   Xinshi Chen
   A literature review, in partial fulfillment of PhD qualifying exam requirements, 2019 [paper]
5. **Master Thesis: Parametric Finite Element Method for Shape Optimization**
   Xinshi Chen, Eric Chung
   CUHK Theses & Dissertations Collection 2017 [paper]

EXPERIENCE

Mohamed bin Zayed University of Artificial Intelligence, UAE 2021/02-2021/07
Research Assistant

- Conduct research on multi-task learning of DAG estimation. The work is accepted at NeuRIPs 2021.

Facebook AI, Menlo Park, United States 2020/06-2020/08
Research Intern in Personalization Team

- Design a user model for large-scale recommendation system. By modeling active and inactive users in different ways, the overall user model is simple yet effective, achieving at least 7% improvement on two largest benchmark datasets that contain billions of user-item interaction data.

Ant Financial (subsidiary of Alibaba), Hangzhou, China 2018/06-2018/08
Research Intern in AI Department

- Work on financial news recommendation. The work is accepted at ICML 2019.

Oak Ridge National Laboratory, United States 2014/06-2014/08
REU Research Intern

- Mentor: Dr. Joshua Fu, Dr. John Drake and Dr. Kwai Wong
- Solve diffusion-convection equation based on finite element method [Project link]

AWARD

- Google PhD Fellowship, 2020-2022
- ICLR Travel Award, 2020; ICML Travel Award, 2019
- Postgraduate Studentship, CUHK, 2015-2017
- Best oral presentation in 3rd AoE(Area of Excellence) Symposium, 2016
- Professor Charles K. Kao Research Scholarship, 2013-14
- College Head's list - for outstanding academic performance, 2013-14
- Undergraduate Exchange Scholarship, 2013

ACADEMIC SERVICE

- PC/Reviewer: AAAI 2020-22, ICLR 2020-22, AISTAT 2020-22, ICML 2020-22, NIPS 2020-21, IJCAL 2021, MSML 2020-21
- Voluntary organizer for 2018 High School Math Competition (held in Georgia Tech)

TEACHING

School of Computational Science and Engineering, Georgia Institution of Technology

- CSE6740 Computational Data Analysis (Two Guest Lectures) Fall, 2019

School of Mathematics, Georgia Institution of Technology

- MATH2551 Multivariable Calculus (Recitation, Teaching) Fall, 2017

Department of Mathematics, Chinese University of Hong Kong Spring, 2018

- MATH3230 Numerical Analysis (Tutorial) Fall, 2016
- MATH3240 Numerical Methods for Differential Equations (Tutorial) Spring, 2016
- MATH2010 Advanced Calculus I (Tutorial) Spring, 2016
- MATH3230 Numerical Analysis (Tutorial) Fall, 2015
- MATH1510 Calculus for Engineers (Tutorial) Fall, 2015

Enrichment Programme for Young Mathematics Talents

- SAYT1054 Mathematical Analysis (Discussion Group) 2013/11-2014/02

SKILLS

Language **Mandarin** (native) **Cantonese** (native) **English** (fluent)
Computer PyTorch, Tensorflow, SQL, C++, C, Matlab, LaTex, LINUX.

EXTRA-CURRICULUM

Volunteer Experience

- Bronze Award for Volunteer Service(Individual) 2012 - *issued by HK Social Welfare Department*
- Gold Award for Volunteer Service(Group) 2012 - *issued by HK Social Welfare Department*
- Overall Best Mainland Service Project 2011/12 - *Caring Heart Community Service Project*

Certificates

- Completion of the Mental Health First Aid Course (certified by MHFA International)
- Advanced Open Water Diver (certified by PADI)

Hobbies

Dancing, scuba diving, skiing, etc.