Xiangchen **Song**

RESEARCH ASSISTANT · DATA MINING RESEARCHER

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Research Interest

Data Mining, **Machine Learning** and **Bioinformatics**, with an emphasis on the minimum human effort for knowledge construction and application.

Education Backgrounds

UIUC (University of Illinois at Urbana-Champaign)   *Champaign, IL, USA*

B.S. IN MATHEMATICS AND COMPUTER SCIENCE   *Aug. 2018 - Dec. 2020*

• GPA: 4.0/4.0
• Class Rank: 1/132

CityU HK (City University of Hong Kong) (Transferred out)   *Kowloon Tong, Hong Kong*

B.ENG. IN ELECTRONIC AND COMMUNICATION ENGINEERING   *Aug. 2016 - Aug. 2018*

• GPA: 4.12/4.3, Major GPA: 4.25/4.3
• Class Rank: 1/126, EE Department Honor Society Member.

Honors & Awards

Jan 2021	**WSDM 2021 Student Travel Grant**, WSDM	*Jerusalem, Israel*
Dec 2020	**Graduated with College Distinction(Top 3 percent), Summa Cum Laude**, LAS College, UIUC	*Champaign, IL*
Dec 2020	**Graduated with Highest Distinction in MATH & CS**, LAS College, UIUC	*Champaign, IL*
Dec 2020	**Honorable Mention for CRA Outstanding Undergraduate Researchers Award 2021**, CRA	*US*
Apr 2020	**John R. Pasta Outstanding Undergraduate Award**, Department of Computer Science, UIUC	*Champaign, IL*
2018-2020	**Dean's List**, College of Liberal Arts & Sciences, UIUC	*Champaign, IL*
Jan 2018	**Compass Scholarship(Top 1)**, City University of Hong Kong	*Kowloon Tong, HK*
Sep 2016	**Entrance Scholarships for Non-Local Students**, City University of Hong Kong	*Kowloon Tong, HK*
2016-2018	**Dean's List**, College of Engineering, City University of Hong Kong	*Kowloon Tong, HK*

Publications & Preprints

GRAPH MINING   * DENOTES EQUAL CONTRIBUTION

• Di Jin*, **Xiangchen Song***, Zhizhi Yu, Ziyang Liu, Heling Zhang, Zhaomeng Cheng, Jiawei Han. "BiTe-GCN: A New GCN Architecture via Bidirectional Convolution of Topology and Features on Text-Rich Networks". The 14th ACM International Conference on Web Search and Data Mining (**WSDM**), 2021

• **Xiangchen Song**, Sha Li, Bangzheng Li, Jieyu Zhang, Jiawei Han, Hanghang Tong. "Expert Finding via Subgraph Similarity Search on HINs". (preprint)

TEXT MINING

• Jieyu Zhang, **Xiangchen Song**, Ying Zeng, Jiaze Chen, Yuning Mao, Jiaming Shen, Lei Li. "Taxonomy Completion via Triplet Matching Network". The Thirty-Fifth AAAI Conference on Artificial Intelligence (**AAAI**), 2021

• **Xiangchen Song**, Jieyu Zhang, Chao Zhang. "Taxonomy Enlargement via Reinforcement Learning based Matching Network". (In preparation)

• **Xiangchen Song**, Jiaming Shen, Jiawei Han. "TaxoSort: Emerging Concept Sort in Taxonomy Expansion". (preprint)

• Sha Li*, **Xiangchen Song***, Jieyu Zhang, Jiawei Han and Heng Ji. "Unsupervised Role Discovery". (preprint)

BIOINFORMATICS

• Xuan Wang, **Xiangchen Song**, Bangzheng Li, Kang Zhou, Qi Li, Jiawei Han. "Fine-Grained Named Entity Recognized Dataset of COVID-19 Literature". IEEE International Conference on Bioinformatics and Biomedicine (**BIBM**) 2020, Short.

• Xuan Wang, **Xiangchen Song**, Bangzheng Li, Yingjun Guan and Jiawei Han. "Comprehensive Named Entity Recognition on CORD-19 with Distant or Weak Supervision". Intelligent Systems for Molecular Biology (**ISMB**) 2020 Abstracts (Oral and Poster)

• Xuan Wang, Yingjun Guan, Aabhas Chauha, Weili Liu, **Xiangchen Song**, Bangzheng Li, Ruisong Li, Vivian Hu, and Jiawei Han "EVIDENCEMINER: Textual Evidence Mining in COVID-19 Literature". under review

• Qingyun Wang, Manling Li, Xuan Wang, [and 22 others, including **Xiangchen Song**]. "COVID-19 Literature Knowledge Graph Construction and Drug Repurposing Report Generation". (preprint)

Research & Work Experience

GEORGIA INSTITUTE OF TECHNOLOGY

Advised by Prof. Chao Zhang.

Recursive Taxonomy Expansion via Reinforcement Learning *Atlanta, GA*

- Further extend the taxonomy expansion task to automatically expand with emerging concept. *May. 2020 - now*
- Introduce reinforcement learning to rank the emerging concepts.
- Utilize recursive pretrained model and use RL to finetune the performance.
- Advisor: Prof. Chao Zhang and Prof. Jiawei Han

DATA MINING GROUP AT UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Research Assistant Advised by Prof. Jiawei Han.

Bidirectional Convolution of Topology and Features on Text-Rich Networks *Champaign, IL*

- Construct bi-typed text-rich networks based on feature information *May. 2020 - Aug. 2020*
- Perform joint-convolution on both topology and features
- Test performance on real-word citation networks
- with: Prof. Di Jin, Advisor: Prof. Jiawei Han

Named Entity Recognition study on COVID-19 Literature *Champaign, IL*

- Develop seed guided distantly supervised Named Entity Recognition (NER). *Mar. 2020 - Aug. 2020*
- Ensemble multi-source NER result for fine-grained COVID-19 NER dataset
- with Xuan Wang, Bangzheng Li, Advisor: Prof. Jiawei Han and Prof. Qi Li

Taxonomy Expansion with Emerging Concept Set *Champaign, IL*

- Further develop the task and allow taxonomy structure generated within emerging concepts. *Feb. 2020 - Jun. 2020*
- Use self-supervision data to learn a model to generate a pseudo-order for taxonomy expansion.
- Compatible with state-of-the-art Taxonomy Expansion Models.
- with Jiaming Shen, Advisor: Prof. Jiawei Han

Expert Finding via Subgraph Similarity Search on HINs *Champaign, IL*

- Introduce a novel embedding-based graph similarity search ranking algorithm for expert finding. *Dec. 2019 - May. 2019*
- Learning node embedding utilizing random walk based embedding technique.
- Random projection to generate graph-embedding.
- Advisor: Prof. Jiawei Han and Prof. Hanghang Tong

Unsupervised Role discovery *Champaign, IL*

- End-to-end model for both schema induction and slot filling. *Aug. 2019 - Mar. 2020*
- Automatically discover important event-specific roles for unlabeled corpus.
- with Sha Li, Advisor: Prof. Jiawei Han and Prof. Heng Ji

CITY UNIVERSITY OF HONG KONG

Research Assistant Advised by Prof. Lin Dai.

Random Access Analysis *Kowloon Tong, Hong Kong*

- Model and evaluate network performance of mixture of Aloha & CSMA System. *May. 2018 - Aug. 2018*
- Provide optimization method for given scenarios (Separated or overall performance).
- Advisor: Prof. Lin Dai

Teaching Experience

- **Course Assistant**, CS473: Algorithms, UIUC, 2020 Spring.
- **Course Assistant**, CS374: Algorithms and Models of Computation, UIUC, 2020 Spring.
- **Course Assistant**, CS374: Algorithms and Models of Computation, UIUC, 2019 Fall.
- **Tutor**, EE Peer Tutoring Scheme, CityU HK, 2018 Spring.
- **Tutor**, EE Peer Tutoring Scheme, CityU HK, 2017 Fall.

Services

PAPER REVIEWS

- *Humanities & Social Sciences Communications*.
- The International World Wide Web Conference (**WWW**), 2021.
- The International Conference on Web Information Systems Engineering (**WISE**), 2020.

Extracurricular Activity

- **President**, Calligraphantasy - Chinese Calligraphy Culture Development Society in Hong Kong, 2017-2018
- **Member**, City-Youth Empowerment Project(CYEP), Hong Kong, 2017-2018
- **Staff Member**, IMUNC Beijing - Mock United Nation in Beijing, 2017