Manling Li

Educations

University of Illinois at Urbana-Champaign, USA

2023 (expected)

- Ph.D. in Computer Science
- Advisor: Prof. Heng Ji
- Thesis Committee: Shih-Fu Chang, Kyunghyun Cho, Chengxiang Zhai, Jiawei Han
- Thesis Title: Towards Factuality in Information Access: Event-Centric Multimodal Knowledge Acquisition

Chinese Academy of Sciences, Institute of Computing Technology, China

2018

• M.S. in Computer Science and Technology

University of Science and Technology Beijing, China

2015

• B.E. in Computer Science (Internet of Things), B.M. in Information Management and Information Systems (minor)

Selected Awards

- ACL 2020 Best Demo Paper Award [P5]
- NAACL 2021 Best Demo Paper Award [P7]
- DARPA Riser in 2022 (nominated by DARPA)
- Microsoft Research PhD Fellowship in 2021
- EE CS Rising Star in 2022
- Mavis Future Faculty Fellow 2021-2022
- · C.L. and Jane Liu Award in 2019 (awarded one student for exceptional research potential in UIUC CS department)
- National Scholarship in 2014 (the most prestigious scholarship in China)
- Ranked 1st in TAC Streaming Multimedia Knowledge Base Population (SM-KBP) 2019 and 2020

Selected Projects

DARPA AIDA: Active Interpretation of Disparate Alternatives

2018 - 2022

- · Topic: Multimedia Knowledge Extraction, including extraction of entities, relations, events, argument roles
- Led the development of open-source multimedia knowledge extractor GAIA, awarded ACL 2020 Best Demo Paper
- Ranked 1st in NIST Streaming Multimedia Knowledge Base Population (SM-KBP) evaluation in both 2019 and 2020
- Nominated and Selected as a **DARPA Riser** in 2022. Presented at DARPA Forward event about next big idea
- Led the software transfer for dockerized knowledge extraction system to DARPA and ARL
- Invited multiple times to present our work at DARPA Demo Days and ARL Transition Days

DARPA KAIROS: Knowledge-directed Artificial Intelligence Reasoning Over Schemas

2019 - Present

- Topic: Event Schema Induction via Temporal Event Graph Modeling, Schema-guided Event Prediction
- Led the generation of schema library in 2020 DARPA KAIROS Phase I evaluation

COVID-KG: COVID-19 Literature Knowledge Graph Construction

2020 - 2020

- Topic: Scientific Information Extraction, containing interactions among genes, diseases, symptoms, chemicals
- · Led the knowledge reasoning based on the connections between diseases, symptoms, genes, and chemicals
- Awarded NAACL 2021 Best Demo Paper [C7]; The KG has been downloaded more than 2000 times

ARL Network Science Collaborative Technology Alliance (NS-CTA)

2018 - 2020

- Topic: Event Knowledge Extraction and Reasoning, including event spatial-temporal tracking and event OA
- · Led the transition of event tracking system to ARL, including event timeline, event heatmap, and entity graph retrieval
- The event tracking demo was selected to present at the ARL Transition Day

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NSF: Multimodal-Sensor-Enabled Environments with Advanced Cognitive Computing Enabling Smart Group Meeting Facilitation Services

2018 - 2018

- Topic: Multimodal Meeting Summarization
- Invited talks at industrial research labs for the work of meeting summarization, including Intel MDI Research, et al.

Internships

Microsoft Research, Redmond, WA, USA

2021

Mentor: Ruochen Xu. Co-mentors: Shuohang Wang, Luowei Zhou, Chenguang Zhu

• Topic: Vision-Language Pretraining with Event Knowledge, published at CVPR 2022 [P15]

IBM Research, Yorktown Heights, NY, USA

2020

Mentor: Tengfei Ma, Mo Yu. Co-mentors: Lingfei Wu, Tian Gao

• Topic: Graph Compession via Optimal Transport for Timeline Summarization, published at EMNLP 2021 [P10]

Publications _

Google Scholar: https://scholar.google.com/citations?user=6U4SXnUAAAAJ&hl=en

Peer-reviewed Conference and Journal Publications

[P23] Non-Sequential Graph Script Induction via Multimedia Grounding

Yu Zhou, Sha Li, <u>Manling Li</u>, Xudong Lin, Shih-Fu Chang, Mohit Bansal and Heng Ji **ACL** 2023 (by supervised student)

[P22] A Language First Approach to Procedure Planning

Jiateng Liu, Sha Li, Zhenhailong Wang, Manling Li, Heng Ji ACL 2023 (by supervised student)

[P21] Open-Domain Hierarchical Event Schema Induction by Incremental Prompting and Verification

Sha Li, Ruining Zhao, Manling Li, Heng Ji, Chris Callison-Burch and Jiawei Han ACL 2023

[P20] Multimedia Generative Script Learning for Task Planning

Qingyun Wang, <u>Manling Li</u>, Hou Pong Chan, Lifu Huang, Julia Hockenmaier, Girish Chowdhary and Heng Ji **ACL** 2023 Findings

[P19] Learning to Decompose Visual Features with Latent Textual Prompts

Feng Wang, Manling Li, Xudong Lin, Hairong Lv, Alexander Schwing, Heng Ji

ICLR 2023 (by supervised student)

[P18] Video Event Extraction via Tracking Visual States of Arguments

Guang Yang, <u>Manling Li</u>, Xudong Lin, Jiajie Zhang, Shih-Fu Chang, Heng Ji **AAAI** 2023 (by supervised student)

[P17] ADEPT: A DEbiasing PrompT Framework

Ke Yang, Charles Yu, Yi Fung, Manling Li, Heng Ji

AAAI 2023 (by supervised student)

[P16] Towards Fast Adaptation of Pretrained Contrastive Models for Multi-channel Video-Language Retrieval

Xudong Lin, Simran Tiwari, Shiyuan Huang, <u>Manling Li</u>, Mike Zheng Shou, Heng Ji, Shih-Fu Chang **CVPR** 2023

[P15] CLIP-Event: Connecting Vision and Text with Event Structures

Manling Li, Ruochen Xu, Shuohang Wang, Xudong Lin, Chenguang Zhu, Michael Zeng, Heng Ji, Shih-Fu Chang CVPR 2022 (Oral)

[P14] Language Models with Image Descriptors are Strong Few-Shot Video-Language Learners

Zhenhailong Wang*, <u>Manling Li*</u>, Ruochen Xu, Luowei Zhou, Jie Lei, Xudong Lin, Shuohang Wang, Ziyi Yang, Chenguang Zhu, Derek Hoiem, Shih-Fu Chang, Mohit Bansal, Heng Ji

NeurIPS 2022 (* denotes equal contribution)

[P13] COVID-19 Claim Radar: A Structured Claim Extraction and Tracking System

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Manling Li, Revanth Gangi Reddy, Ziqi Wang, Yi-Shyuan Chiang, Tuan M. Lai, Pengfei Yu, Zixuan Zhang, Heng Ji ACL Demo 2022

[P12] Event Schema Induction with Double Graph Autoencoders

Xiaomeng Jin, **Manling Li**, Heng Ji

NAACL 2022 (by supervised student)

[P11] MuMuQA: Multimedia Multi-Hop News Question Answering via Knowledge Extraction and Grounding

Revanth Reddy, Xilin Rui, **Manling Li**, Xudong Li, Haoyang Wen, Jaemin Cho, Lifu Huang, Mohit Bansal, Avi Sil, Shih-Fu Chang, Alexander Schiwing, Heng Ji

AAAI 2022 (by supervised students)

[P10] Timeline Summarization based on Event Graph Compression via Time-Aware Optimal Transport

Manling Li, Tengfei Ma, Mo Yu, Lingfei Wu, Tian Guo, Heng Ji, Kathleen McKeown EMNLP 2021

[P9] The Future is not One-dimensional: Complex Event Schema Induction via Graph Modeling

 ${\color{red} \underline{\textbf{Manling Li}}}$, Sha Li, Zhenhailong Wang, Lifu Huang, Kyunghyun Cho, Heng Ji, Jiawei Han ${\color{red} \underline{\textbf{EMNLP}}}$ 2021

[P8] Joint Multimedia Event Extraction from Video and Article

Brian Chen, Xudong Lin, Christopher Thomas, <u>Manling Li</u>, Shoya Yoshida, Lovish Chum, Heng Ji, Shih-Fu Chang **EMNLP** 2021 Findings

[P7] COVID-19 Literature Knowledge Graph Construction and Drug Repurposing Report Generation

Qingyun Wang, Manling Li, Xuan Wang, Nikolaus Parulian, Guangxing Han, Jiawei Ma, Jingxuan Tu, Ying Lin, Haoran Zhang, Weili Liu, Aabhas Chauhan, Yingjun Guan, Bangzheng Li, Ruisong Li, Xiangchen Song, Heng Ji, Jiawei Han, Shih-Fu Chang, James Pustejovsky, David Liem, Ahmed Elsayed, Martha Palmer, Jasmine Rah, Clare Voss, Cynthia Schneider, Boyan Onyshkevych NAACL 2021 Best Demo Paper

[P6] Connecting the Dots: Event Graph Schema Induction with Path Language Modeling

Manling Li, Qi Zeng, Ying Lin, Kyunghyun Cho, Heng Ji, Jonathan May, Nathanael Chambers, Clare Voss **EMNLP** 2020

[P5] GAIA: A Fine-grained Multimedia Knowledge Extraction System

Manling Li*, Alireza Zareian*, Ying Lin, Xiaoman Pan, Spencer Whitehead, Brian Chen, Bo Wu, Heng Ji, Shih-Fu Chang, Clare R Voss, Dan Napierski, Marjorie Freedman

ACL 2020 Best Demo Paper

[P4] Cross-media Structured Common Space for Multimedia Event Extraction

Manling Li*, Alireza Zareian*, Qi Zeng, Spencer Whitehead, Di Lu, Heng Ji, Shih-Fu Chang ACL 2020

[P3] Multilingual Entity, Relation, Event and Human Value Extraction

Manling Li, Ying Lin, Joe Hoover, Spencer Whitehead, Clare R Voss, Morteza Dehghani, Heng Ji NAACL 2019 Demo

[P2] Keep Meeting Summaries on Topic: Abstractive Multi-Modal Meeting Summarization

Manling Li, Lingyu Zhang, Heng Ji, Rich Radke ACL 2019

[P1] Link Prediction in Knowledge Graphs: A Hierarchy-Constrained Approach

Manling Li, Yuanzhuo Wang, Denghui Zhang, Yantao Jia, Xueqi Cheng IEEE Transactions on Big Data

Posters, Extended Abstracts, Workshop Papers and Technical Reports

[W10] GAIA at SM-KBP 2020 - A Dockerized Multi-media Multi-lingual Knowledge Extraction, Clustering, Temporal Tracking and Hypothesis Generation System

Manling Li, Ying Lin, Tuan Manh Lai, Xiaoman Pan, Haoyang Wen, Sha Li, Zhenhailong Wang, Pengfei Yu, Lifu Huang, Di Lu, Qingyun Wang, Haoran Zhang, Qi Zeng, Chi Han, Zixuan Zhang, Yujia Qin, Xiaodan Hu, Nikolaus Parulian, Daniel Campos, Heng Ji, Brian Chen, Xudong Lin, Alireza Zareian, Amith Ananthram, Emily Allaway, Shih-Fu Chang, Kathleen McKeown, Yixiang Yao, Yifan Wang, Michael Spector, Mitchell DeHaven, Daniel Napierski, Marjorie Freedman, Pedro Szekely, Haidong Zhu,

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Ram Nevatia, Yang Bai, Yifan Wang, Ali Sadeghian, Haodi Ma, Daisy Zhe Wang NIST TAC-KBP 2020

Ranked 1st in NIST Streaming Multimedia Knowledge Base Population (SM-KBP) evaluation in 2020

[W9] **GENE: Global Event Network Embedding**

Qi Zeng, Manling Li, Tuan Lai, Heng Ji, Mohit Bansal and Hanghang Tong TextGraphs@NAACL2021

[W8] UIUC TAC2020 RUFES System Description

Revanth Gangi Reddy, <u>Manling Li</u>, Haoyang Wen and Heng Ji NIST TAC-KBP 2020

[W7] GAIA at SM-KBP 2019 - A Multi-media Multi-lingual Fine-Grained Knowledge Extraction and Hypothesis Generation System

Manling Li, Ying Lin, Ananya Subburathinam, Spencer Whitehead, Xiaoman Pan, Di Lu, Qingyun Wang, Tongtao Zhang, Lifu Huang, Heng Ji, Alireza Zareian, Hassan Akbari, Brian Chen, Bo Wu, Emily Allaway, Shih-Fu Chang, Kathleen McKeown, Yixiang Yao, Jennifer Chen, Eric Berquist, Kexuan Sun, Xujun Peng, Ryan Gabbard Marjorie Freedman, Pedro Szekely, T.K. Satish Kumar, Arka Sadhu, Ram Nevatia, Miguel Rodriguez, Yifan Wang, Yang Bai, Ali Sadeghian, Daisy Zhe Wang NIST TAC-KBP 2019

Ranked 1st in NIST Streaming Multimedia Knowledge Base Population (SM-KBP) evaluation in 2019

[W6] A Baseline Fine-Grained Entity Extraction System for TAC-KBP2019

Ying Lin, Xiaoman Pan, Manling Li, Heng Ji NIST TAC-KBP 2019

[W5] Hierarchical Types Constrained Topic Entity Detection for Knowledge Base Question Answering

Yunqi Qiu, <u>Manling Li</u>, Yuanzhuo Wang, Yantao Jia. WWW 2018 (abstract)

[W4] Path-Based Attention Neural Model for Fine-Grained Entity Typing

Denghui Zhang, <u>Manling Li</u>, Pengshan Cai, Yantao Jia, Yuanzhuo Wang AAAI 2018 (abstract)

[W3] OpenKN at TAC KBP 2016

<u>Manling Li</u>, Xinlei Chen, Yantao Jia, Yuanzhuo Wang, Xiaolong Jin, Zixuan Li, Juan Yao, Fan Yang, Yunqi Qiu, Jialin Su, Xueqi Cheng

NIST TAC-KBP 2016

[W2] Hierarchy-Based Link Prediction in Knowledge Graphs

<u>Manling Li</u>, Yantao Jia, Yuanzhuo Wang, Jingyuan Li, Xueqi Cheng WWW 2016 (abstract)

[W1] Predicting Links and Their Building Time: A Path-Based Method

Manling Li, Yantao Jia, Yuanzhuo Wang, Zeya Zhao, Xueqi Cheng AAAI 2016 (abstract)

Patents

[PT6] Knowledge Graph Compression

1st student author. No.P202007467US01 (US Patent, with IBM Research)

[PT5] An Ontology Alignment Algorithm Based on Knowledge Graph Embedding

1st student author. No.CN108694201A (Chinese Patent, with Chinese Academy of Sciences)

[PT4] A Relation Inference System Based on Knowledge Graph Embedding

1st student author. No.CN106909622A (Chinese Patent, with Chinese Academy of Sciences)

[PT3] A Tag Inference System Based on Knowledge Graph Embedding

2nd student author. No.CN107391577A (Chinese Patent, with Chinese Academy of Sciences)

[PT2] An Attribute Extraction Method for Web Pages

2nd student author. No.CN104636466A (Chinese Patent, with Chinese Academy of Sciences)

[PT1] A Fine-Grained Classification Method for Knowledge Base

2nd student author. No.CN104615687B (Chinese Patent, with Chinese Academy of Sciences)

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Invited Talks

Tutorials

[T20] Knowledge-Driven Vision-Language Pretraining

Manling Li, Xudong Lin, Jie Lei, Mohit Bansal, Heng Ji, Carl Vondrick, Shih-Fu Chang Tutorial at CVPR 2023. Jun 2023

[T19] Knowledge-Driven Vision-Language Pretraining

Manling Li, Xudong Lin, Jie Lei, Mohit Bansal, Heng Ji, Shih-Fu Chang Tutorial at AAAI 2023. Feb 2023

[T18] New Frontiers of Information Extraction

Muhao Chen, Lifu Huang, Manling Li, Ben Zhou, Heng Ji and Dan Roth Tutorial at NAACL 2022. Jul 2022

[T17] Event-centric Natural Language Processing

Muhao Chen, Hongming Zhang, Qiang Ning, Manling Li, Heng Ji, Kathleen McKeown, Dan Roth Tutorial at ACL 2021. Aug 2021

[T16] Event-centric Natural Language Understanding

Muhao Chen, Hongming Zhang, Qiang Ning, Manling Li, Heng Ji, Dan Roth Tutorial at AAAI 2021. Feb 2021

Invited Seminars

[T14] Multimedia Event Knowledge Acquisition: From Object-Centric to Event-Centric

EE CS Rising Star Workshop, University of Texas at Austin, USA. Oct 2022.

[T13] Event-Centric Multimedia Data Understanding

Ohio State University, USA. Oct 2022.

Singapore Management University, Singapore. Oct 2022.

George Mason University, USA. Oct 2022.

North Carolina State University, USA. Nov 2022.

University of Texas at Austin, USA. Dec 2022.

[T12] Towards Accurate Intelligent Analysis: Event-Centric Multimedia Knowledge Extraction

DARPA Forward (Invite-Only), USA. Oct 2022.

[T11] Multimedia Event Extraction: From Object-Centric to Event-Centric

Virginia Tech, USA. Sept 2022.

[T10] Event Knowledge Graph Construction

LOGS Graph Reasoning Seminar, China. Aug 2022.

[T9] Event Graph Structures for Vision-Language Understanding

DataFun, China. Jun 2022.

[T8] Connecting Vision and Text using Event Structures

NewsBreak, USA. Apr 2022.

$[\top 7]$ Memories as Repositories of Events: Structural Event Knowledge Acquisition

University of Notre Dame, USA. Feb 2022.

[T6] Comprehensive Event Understanding in Multimedia Data

USC ISI, USA. Dec 2021.

$[T5] \ \, \textbf{Structural Event Knowledge Acquisition from Multimedia Data}$

UIUC NLP Seminar, USA. Nov 2021.

[T4] Event Extraction and Reasoning in Multimedia News Data

Microsoft Research, USA. Nov 2021.

$[T3] \ \ \textbf{Visual Event Understanding with Contrastive Image-Language Pretraining}$

Microsoft Research, USA. Aug 2021.

[T2] Fine-Grained Knowledge Extraction System from Multimedia Data

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ai.science, USA. Oct 2020.

[T1] Event Understanding and Narration for Multimedia Data

Intel MDI Research Lab, USA. May 2020.

Professional Services

Area Chair

• ACL (Information Extraction Track, 2022)

Senior Program Committee Member

• IJCAI (2021)

Workshop Organizer

Knowledge Discovery from Unstructured Data in Financial Services (KDF) Workshop at SIGIR (2023)

Program Committee Member

- ACL Rolling Review (2021-)
- ACL (2021-), EMNLP (2021-), NAACL (2021-), COLING (2020-), EACL (2021-), NLPCC (2021-), AACL (2020-), CCL (2020-)
- AAAI (2021-), WWW (2021-), AKBC (2021-), KDD DI Workshop (2021-)

Journal Reviewer

- IEEE MultiMedia
- Journal of Artificial Intelligence Research
- Journal of Advances in Information Technology

Community Services

- ACM Mentor, ACM Mentorship Program at UIUC, 2022
- CS Ambassador, UIUC CS Visit Day for Prospective Graduate Students, 2022
- Graduate Student Representative, UIUC CS Visit Day, 2020
- Co-Chair, "Source" Department Technology Association in University of Science and Technology Beijing, 2014

Teaching and Mentoring Experiences

Teaching Assistant

• CS 598 Knowledge-driven Natural Language Generation, Spring 2022

Advising Assistant

• CS 591 PhD Orientation Seminar, Fall 2021

Guest Lecturer

Event-Centric Multimedia Encoding

CS 6604 Advanced Topics in Natural Language Processing, Virginia Tech, Fall 2022

· Event-Centric Multimedia Encoding

CSC 791&591: Advanced Topics in Efficient Deep Learning, North Carolina State University, Fall 2022

· Knowledge-Driven Vision-Language Pretraining

CS 546 Advanced Topics in Natural Language Processing, UIUC, Fall 2022

· Recent Advances in Multimedia Encoding

CS 546 Advanced Topics in Natural Language Processing, UIUC, Fall 2022

Timeline Summarization: Introducing Temporal Dimensions into Summarization

CS 598 Knowledge Driven Natural Language Generation, UIUC, Spring 2022

Multimedia Encoding via Vision-Language Pretraining

CS 546 Advanced Topics in Natural Language Processing, UIUC, Fall 2021

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Mentored Students

• Guang Yang, 2022-Now

CS Undergraduate at Tsinghua University

Submitted a first-author paper on video event extraction to AAAI 2023

• Stuti Agrawal, 2022-Now

CS Undergraduate at UIUC

Worked on Interactive Schema Induction

• **Ke Yang**, 2022-Now

ECE Undergraduate at Tsinghua University

Submitted a first-author paper on language model debiasing to AAAI 2023

• Feng Wang, 2022-Now

ECE Master at Tsinghua University

Submitted a first-author paper on visual-language prompting to ICLR 2023

• Yu Zhou, 2022-Now

CS Undergraduate at UCLA

Will submit a first-author paper on multimedia scheam induction to ACL 2023

• Jialiang Xu, 2022-Now

ECE Undergraduate at UIUC

Will submit a first-author paper on framing to ACL 2023

• Zhenhailong Wang, 2020-2022

Civil Engineering Master at UIUC, now CS Master at UIUC

Published his first paper on schema induction at EMNLP 2021, and his first-author paper at NeurIPS 2022

Zhiying Zhu, 2021

CS Undergraduate at Zhejiang University, now CS Master at CMU

Co-advised with Prof Yixin Cao from Singapore Management University

Revanth Gangi Reddy, 2020-2021

CS Master at UIUC, now CS PhD at UIUC

Published a first-author paper on multimedia question answering at AAAI 2022

• Xilin Rui, 2020-2021

CS Undergraduate at Tsinghua University

Published her first paper on multimedia question answering at AAAI 2022

• Shengyu Feng, 2021

CS Master at UIUC, now CS PhD at CMU

Published his first NLP paper on event coreference at CRAC workshop at EMNLP 2021

• Emma Hamel, 2020

CS Undergraduate at UIUC

Worked on chemical schema induction

Open-Source Systems.

• COVID-19 Claim Radar (lead author) [Code]

A structured claim extraction system, as well as refuting/supporting claim discovery.

GAIA: A Fine-grained Multimedia Knowledge Extraction System (lead author) [Code]

Entity, relaton, event extraction with coreference for multilingual (English, Spanish, and Russian) multimedia corpus.

Cross-lingual Entity Discovery and Linking (lead author) [Code]

Entity extraction and coreference for English, Spanish, and Chinese.

• Multilingual Entity, Relation, Event and Human Value Extraction (lead author) [Code]

Knowledge extraction system with human values for English, Russian, and Ukrainian.

• RESIN: Schema-Guided Cross-document Cross-lingual Cross-media Event Extraction and Tracking [Code] Schema-Guided cross-document information extraction and tracking system.

Selected Media Coverage

 Manling Li Produces Award-Winning Event Schema Research with Adviser and Mentor Heng Ji CS @ Illinois News

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Illinois CS Papers Earn Top Honors at Conferences

CS @ Illinois News

· Announcing Microsoft Research 2021 Global PhD Fellowship Recipients

Microsoft Research

• Tongshuang Wu won Best Paper Award, Manling Li won Best Demo Paper Award at ACL 2020

Al Era

References _

• Heng Ji (doctoral advisor)

Professor

Computer Science Department, University of Illinois at Urbana-Champaign

(217) 244-0862

· Shih-Fu Chang

Richard Dicker Professor

Electrical Engineering Department and Computer Science Department, Columbia University

School of Engineering and Applied Science, Columbia University

(212) 854-6894

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· Kyunghyun Cho

Associate Professor

Department of Computer Science and Center for Data Science, New York University

Interim Deputy Director

Center for Data Science, New York University

(212) 998-3638

Kathleen McKeown

Henry and Gertrude Rothschild Professor

Department of Computer Science, Columbia University

Founding Director

Columbia's Data Science Institute

(212) 939-7118

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· Jiawei Han

Michael Aiken Chair Professor

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