Manling Li

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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: **From Entity-Centric to 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** [P7]
- **NAACL 2021 Best Demo Paper Award** [P9]
- **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** [C9]; 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 QA
- 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**

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 [P19]

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 [P12]

Publications

Google Scholar: https://scholar.google.com/citations?user=6U4SXnUAAAAJhl=en

Peer-reviewed Conference and Journal Publications

[P19] **CLIP-Event: Connecting Vision and Text with Event Structures**
<u>Manling Li</u>, Ruochen Xu, Shuohang Wang, Xudong Lin, Chenguang Zhu, Michael Zeng, Heng Ji, Shih-Fu Chang
CVPR 2022 (Oral)

[P18] **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)

[P17] **COVID-19 Claim Radar: A Structured Claim Extraction and Tracking System**
<u>Manling Li</u>, Revanth Gangi Reddy, Ziqi Wang, Yi-Shyuan Chiang, Tuan M. Lai, Pengfei Yu, Zixuan Zhang, Heng Ji
ACL Demo 2022

[P16] **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)

[P15] **ADEPT: A DEbiasing PrompT Framework**
Ke Yang, Charles Yu, Yi Fung, **<u>Manling Li</u>**, Heng Ji
AAAI 2023 (by supervised student)

[P14] **Event Schema Induction with Double Graph Autoencoders**
Xiaomeng Jin, **<u>Manling Li</u>**, Heng Ji
NAACL 2022 (by supervised student)

[P13] **MuMuQA: Multimedia Multi-Hop News Question Answering via Knowledge Extraction and Grounding**
Revanth Reddy, Xilin Rui, **<u>Manling Li</u>**, Xudong Li, Haoyang Wen, Jaemin Cho, Lifu Huang, Mohit Bansal, Avi Sil, Shih-Fu Chang, Alexander Schiwing, Heng Ji
AAAI 2022 (by supervised students)

[P12] **Timeline Summarization based on Event Graph Compression via Time-Aware Optimal Transport**
<u>Manling Li</u>, Tengfei Ma, Mo Yu, Lingfei Wu, Tian Guo, Heng Ji, Kathleen McKeown
EMNLP 2021

[P11] **The Future is not One-dimensional: Complex Event Schema Induction via Graph Modeling**
<u>Manling Li</u>, Sha Li, Zhenhailong Wang, Lifu Huang, Kyunghyun Cho, Heng Ji, Jiawei Han
EMNLP 2021

[P10] **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

[P9] **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

[P8] **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

[P7] **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

[P6] **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

[P5] **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

[P4] **Keep Meeting Summaries on Topic: Abstractive Multi-Modal Meeting Summarization**
Manling Li, Lingyu Zhang, Heng Ji, Rich Radke
ACL 2019

[P3] **Link Prediction in Knowledge Graphs: A Hierarchy-Constrained Approach**
Manling Li, Yuanzhuo Wang, Denghui Zhang, Yantao Jia, Xueqi Cheng
IEEE Transactions on Big Data

Manuscripts and Pre-prints

[P2] **Learning to Decompose Visual Features with Latent Textual Prompts**
Feng Wang, **Manling Li**, Xudong Lin, Hairong Lv, Alexander Schwing, Heng Ji
In arXiv:2210.04287 (By mentored student. Submitted to ICLR 2023)

[P1] **A Language First Approach to Procedure Planning**
Jiateng Liu, Sha Li, Zhenhailong Wang, **Manling Li**, Heng Ji
(By mentored student. Submitted to ACL Rolling Review Dec 2022)

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, 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, **Manling Li**, 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**

<u>Manling Li</u>, 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 GabbardMarjorie 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, <u>Manling Li</u>, 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**
<u>Manling Li</u>, 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)

Invited Talks

Tutorials

[T18] **Knowledge-Driven Vision-Language Pretraining**
Manling Li, Xudong Lin, Jie Lei, Mohit Bansal, Heng Ji, Shih-Fu Chang
Tutorial at AAAI 2023. Feb 2023

[T17] **New Frontiers of Information Extraction**
Muhao Chen, Lifu Huang, Manling Li, Ben Zhou, Heng Ji and Dan Roth
Tutorial at NAACL 2022. Jul 2022

[T16] **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

[T15] **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.

[T7] **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] **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] **Visual Event Understanding with Contrastive Image-Language Pretraining**
Microsoft Research, USA. Aug 2021.

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

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

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
- **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**
  AI Era

References

- **Heng Ji** (doctoral advisor)
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- **Shih-Fu Chang**
  Richard Dicker Professor
  Electrical Engineering Department and Computer Science Department, Columbia University
  Dean

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- **Kyunghyun Cho**

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Interim Deputy Director

Center for Data Science, New York University

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- **Kathleen McKeown**

Henry and Gertrude Rothschild Professor

Department of Computer Science, Columbia University

Founding Director

Columbia's Data Science Institute

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- **Jiawei Han**

Michael Aiken Chair Professor

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