Junheng Hao | Curriculum Vitae

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*Knowledge is power; knowledge graphs are power to
next-generation AI Analytics.*

Education

University of California, Los Angeles (09/2017-*09/2022, expected*)   *Los Angeles, USA*
- Ph.D. Candidate, Department of Computer Science (Candidacy: Dec, 2019)
- Advisors: Yizhou Sun, Wei Wang | Affiliation: Scalable Analytics Institute (ScAi)
- Thesis: Incorporating ontological information in knowledge graph learning and applications

Tsinghua University (08/2013-07/2017)   *Beijing, China*
- Bachelor of Engineering (Major, with honors), School of Information Science and Technology
- Bachelor of Economics (Minor), School of Economics and Management

Technion, Israel Institute of Technology (07/2017-08/2017)   *Haifa, Israel*
- Non-degree Machine Learning Summer Program

Publications & Manuscripts

1. Yu Zhang, Zhihong Shen, Chieh-Han Wu, Boya Xie, **Junheng Hao**, Ye-Yi Wang, Kuansan Wang and Jiawei Han. "Metadata-Induced Contrastive Learning for Zero-Shot Extreme Multi-Label Text Classification" The Web Conference (WWW), 2022.

2. **Junheng Hao**, Chuan Lei, Abdul Quamar, Vasilis Efthymiou, Fatma Ozcan, Yizhou Sun, Wei Wang. "MEDTO: Medical Data to Ontology Matching using Hybrid Graph Neural Networks", published on 27th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD 2021, Applied Data Science Track). [Paper]

3. Jyun-Yu Jiang, Chelsea J.-T. Ju, **Junheng Hao**, Muhao Chen, Wei Wang. "JEDI: Circular RNA Prediction based on Junction Encoders and Deep Interaction among Splice Sites" (accepted by ISMB/ECCB 2021). [Paper]

4. **Junheng Hao**, Tong Zhao, Jin Li, Luna Xin Dong, Christos Faloutsos, Yizhou Sun, Wei Wang. "P-Companion: Framework for Diversified Complementary Product Recommendation", accepted by the 29th ACM International Conference on Information and Knowledge Management (CIKM2020), Applied Research Track. [Paper] [Amazon Science Blog]

5. **Junheng Hao**, Chelsea J.-T. Ju, Muhao Chen, Yizhou Sun, Carlo Zaniolo, Wei Wang. "Bio-JOIE: Joint Representation Learning of Biological Knowledge Bases", accepted by The 11th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB 2020), **Best Student Paper Award**. [Paper] [UCLA Engineering News]

6. **Junheng Hao**, Muhao Chen, Wenchao Yu, Yizhou Sun, Wei Wang. "Universal Representation

Learning of Knowledge Bases by Jointly Embedding Instances and Ontological Concepts", published on 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD 2019, Research Track). [Paper]

7. Chen-Shuo Sun, Xin Pei, **Junheng Hao**, Zuo Zhang. "Accident Impact Analysis in Traffic Safety and Mobility Using Group Network Features", published on *Transportation Research Part B: Methodological (TRB)*, 2018. [Paper]

8. Tanachat Nilanon, Jiayu Yao, **Junheng Hao**, Yan Liu. "Normal/Abnormal Heart Sound Recordings Classification Using Convolutional Neural Network", accepted and presented at Computing in Cardiology (CinC), 2016. [Paper]

9. Chen-Shuo Sun, **Junheng Hao**, Xin Pei, Zuo Zhang. "A Data Driven Approach for Evaluation of Urban Accident Impacts", presented at IEEE Conference on Intelligent Transportation Systems (ITSC 2016) [Paper]

10. Danfeng Guo, Zijie Huang, **Junheng Hao**, Yizhou Sun, Wei Wang, Demetri Terzopoulos, "A Mobility-Aware Longer-Term Deep Learning Model for COVID-19 PandemicPrediction with Policy Impact Analysis" (prerpint, under review).

11. **Junheng Hao**, Lu-An Tang, Yizhou Sun, Zhengzhang Chen, Haifeng Chen, Junghwan Rhee, Zhichun Li and Wei Wang. "MSGT-GNN: Multi-source Graph Knowledge Transfer" (preprint, under review)

12. Yunsheng Bai, Ruchi Jain, **Junheng Hao**, Yang Qiao, Zixia Weng, Yizhou Sun, Wei Wang. "Neighbor Aggregative Network Embedding" (preprint)

13. Muhao Chen*, **Junheng Hao***, Jyun-Yu Jiang, Zijun Xue, Yizhou Sun, Carlo Zaniolo, Wei Wang. "Latent Translational Dialogue State Tracking" (prerpint).

14. **Junheng Hao**, Chieh-Han Wu, Iris Zhihong Shen, Boya Xie, Jennifer Neville, Ye-Yi Wang, Yizhou Sun, Wei Wang. "KG-Doc: Hybrid Knowledge Graph Infused Document Representation Learning" (preprint)

15. **Junheng Hao**, Jingyue Shen, P. Jeffrey Brantingham, Wei Wang. "MurderBookKG: Homicide Analysis from Automatic Case Knowledge Graph Construction" (preprint)

Work Experiences

Microsoft Research | Research Intern   **Summer 2021 | Redmond, WA**
Project: KG-enhanced document representation learning | **Collaborators:** Chieh-Han Wu, Iris Shen, Ye-Yi Wang, Jennifer Neville
- Enhancing document pretrained representations with infused document knowledge graph (DocKG), including Microsoft Academic Graph (Content + Graph).

IBM Research AI (Almaden) | PhD Intern   **Summer 2020 | San Jose, CA**
Project: Ontology Matching by Utilizing Graph Neural Networks | **Mentors:** Chuan Lei, Fatma Ozcan
- Empowering hybrid graph neural networks (GNNs) for ontology matching between relational databases and standard healthcare ontologies.

Amazon Product Graph Team | Applied Scientist Intern   **Summer & Fall 2019 | Seattle, WA**
Project: Diversified Complementary Recommendation on Product Graph | **Collaborators:** Tong Zhao, Luna Xin Dong, Christos Faloutsos
- Enabling diversified complementary recommendation from web-scale product graphs and hierarchical

product ontology.

NEC Lab America, Inc. | Research Intern   **Summer 2018** | **Princeton, NJ**
Project: Multi-source Graph Knowledge Transfer | **Mentors:** Lu-An Tang, Zhichun Li, Haifeng Chen
- Graph-based Multi-source graph knowledge transfer and network fusion on enterprise engines for malicious process detection.

Research Experiences

Knowledge Graph Inference on Texera Platform | Research Assistant   **Los Angeles, CA**
Advisor: Chen Li (UC Irvine), Wei Wang (UCLA)   *Sept 2021 - Present*
- Implementing knowledge graph completion module, such as COVID-19 drug repurposing pipeline, on Texera (one online platform for code-free collaborative modularized ML).

MurderBook: Homicide Knowledge Graph | Research Assistant   **Los Angeles, CA**
Advisor: P. Jeffrey Brantingham (UCLA Department of Anthropology)   *March 2021 - Present*
- Constructing case knowledge graphs for Los Angeles homicide investigation to improve search, analysis and solvability (Text-to-Graph).

Comprehensive KG Representation Learning | Research Assistant   **Los Angeles, CA**
Lab: UCLA Data Mining Group, Scalable Analytics Institute (ScAi)   *Sept. 2017 - Present*
- Incorporating ontologies and semantics in encyclopedia knowledge graphs and wide-ranging biological knowledge bases (gene ontologies, proteins, pathways and reactions, etc).

PhysioNet: ECG/EEG Preventative Diagnosis | Undergrad Visiting Scholar   **Los Angeles, CA**
Advisor: Yan Liu (Melady Lab, University of Southern California)   *Jun. 2016 - Aug. 2016*
- Participating PhysioNet Challenge 2016 (Phonocardiogram classification by revised-AlexNet on EEG spectrogram features).

Data-Driven Methods in Traffic Feature Analysis | Undergrad Researcher   **Beijing, China**
Advisors: Zuo Zhang, Xin Pei (Tsinghua University)   *Sept. 2015 - May 2016*
- Using spatial/temporal information of traffic intersections to promote road network facility and avoid urban congestion.

Academic Services

- **PC member and reviewer**: ACL Rolling Review (2022) NeurIPS (2021), ICML (2020-2022), AAAI (2021,2022), CIKM (2020,2021), ICLR (2020-2022), KDD (2019-2021), ECML-PKDD (2019-21), WDSM (2019), EMNLP (2019), ICDM (2019), SDM (2019), AACL-IJCNLP (2020), etc.
- **Program Committee Board**: IJCAI (2022-2024)
- **Journal/Conference Reviewer**: TPAMI, TBD, TIST, TKDD, etc.
- **Conference Volunteering:** ICLR (2021), KDD (2019, 2020), EMNLP (2020, 2021), NeurIPS (2018, 2020).

Invited Talks & Presentations

- 12/2021: Coupang, Ranking, Discovery and Personalization. Invited tech talk: *Knowledge Graphs Meets Product Recommendation*.
- 10/2021: UCLA CS Data Science Seminar: *Graphs, Transformers, and When They Meet Biology (AlphaFold2)*. [Video]
- 08/2021: Microsoft Search, Assistant and Intelligence (MSAI). Graph learning session: *Knowledge Graph with Ontology Learning and Applications*.
- 07/2019: Amazon, Product Graph. Summer seminar: *Representation Learning on Knowledge Graphs: Embedding, Logic Rules and Graph Neural Networks* (with Yizhou Sun).

Patent Applications

- Chuan Lei, **Junheng Hao**, Vasilis Efthymiou, Fatma Ozcan, Abdul Quamar. *OntoGNN: Hybrid Graph Neural Networks for Ontology Matching.* U.S. Patent Application. (Sept. 2021)

Teaching

- **[Teaching Associate/Head TA; Winter 2021]** CS M146: Introduction to Machine Learning (Instructor: Sriram Sankararaman). TA Evaluation Score: 8.2/9.0. [Website] [Teaching Evaluation]
- **[Teaching Associate/Head TA; Fall 2020]** CS145: Introduction to Data Mining (Instructor: Yizhou Sun). TA Evaluation Score: 8.0/9.0 [Website] [Teaching Evaluation]
- **[Teaching Assistant; Spring 2019]** CS32: Introduction to Computer Science II, Data Structures (Instructor: David Smallberg). [Website]
- **[Teaching Assistant; Winter 2019]** CS32: Introduction to Computer Science II, Data Structures (Instructor: David Smallberg & Carey Nachenberg). [Website]
- **[Teaching Assistant; Fall 2018]** CS145:Introduction to Data Mining (Instructor: Yizhou Sun). [Website]

Mentoring

- **Harini Suresh** (MS Student@UCLA) Capstone project: Pathway knowledge graph based drug discovery (DrugAI)
- **Jingyue Shen** (M.S.@UCLA, now software engineer at Google) Capstone project: Homicide knoweldge graph construction (MurderBook-KG)
- **Kijung Kim** (M.S.@UCLA, now software engineer at Google) Capstone project: Large-scale entity representation learning from multilingual descriptions
- **Vaishnavi Ravindran** (M.S.@UCLA, now applied scientist at Amazon) Capstone project: Biological and healthcare Knowledge graph.
- **Honglin Zheng** (M.S.@UCLA, now software engineer at Google) Capstone project: Relation-aware knowledge graph embedding.

Skills

- **Programming Skills:** Python, C/C++, Java, MATLAB.
- **Operating system & Tools/Libraries:** Linux/macOS, Tensorflow, PyTorch, NLP/Graph deep-learning libraries (DGL, PyTorch Geometric, HuggingFace, etc)
- **Language:** Mandarin (Native), English (Proficient), Spanish (Basic)

Extra-curricular activities & Community Services

- **UCLA Volunteer Income Tax Assistance (VITA) Organization:** IRS-certified volunteer serving free tax preparation assistance to underserved individuals in Los Angeles communities. [Link] [IRS/VITA Certificate]
- **UCLA Bruin Mental Health Advisory Committee:** Representative and advocate volunteer [Link]
- **UCLA Dashew Center for International Students and Scholoars:** Team of Global Siblings Program. [Link]
- **UCLA GUM: Graduate-Undergraduate Mentorship Program** STEM Graduate Mentor. [Link]
- **UCLA CS PhD Mentorship Program** Seinor PhD Mentor
- **UCLA LGBTQ+ Campus Resource Center:** Outreach committee member. [Link]
- **Queer in AI Community:** Member and conference volunteer, workshop coordinator (NeurIPS'20). [Link]