MENGHAI PAN

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Date of Birth: June 12th, 1994

Research Highlights

My broad research interests include smart cities, spatial-temporal data mining, human behavior analysis, big data analytics, deep learning, reinforcement learning and explainable artificial intelligence (XAI). I have published several papers on these areas including one is awarded as the **Best Applied Data Science Paper** in SDM'19.

Education

2016–2021 (Expected) **Worcester Polytechnic Institute (WPI)**, *PhD Candidate in Computer Science*.
Thesis Proposal: "Making Sense of Human-generated Spatio-temporal Data from Urban Environment"
Adviser: Dr. Yanhua Li

2012–2016 **Huazhong University of Science and Technology (HUST)**, *Bachelor of Engineer in Computer Science*.
Thesis: "A Complete Solution Framework for Human Face Image Parsing in Video Stream Based on Deep Learning" (Outstanding Undergraduate Thesis of Hubei Province in China)
Adviser: Dr. Fuhao Zou

Publications

[1] [SDM'19] (Best Applied Data Science Paper award!) **Menghai Pan**, Yanhua Li, Xun Zhou, Zhenming Liu, Rui Song, Hui Lu, and Jun Luo. *Dissecting the Learning Curve of Taxi Drivers: A Data-Driven Approach.* SIAM International Conference on Data Mining (SDM19), Hyatt Regency Calgary | Calgary, Alberta, Canada, May 2 - 4, 2019.

[2] [KDD'20] **Menghai Pan**, Weixiao Huang, Yanhua Li, Xun Zhou, and Jun Luo. *xGAIL: Explainable Generative Adversarial Imitation Learning for Explainable Human Decision Analysis.* the 26th SIGKDD conference on Knowledge Discovery and Data Mining, San Diego, CA, August 23 - 27, 2020, (16.8% Acceptance Ratio=216/1279).

[3] [KDD'20] Huimin Ren, **Menghai Pan (co-first author)**, Yanhua Li, Xun Zhou, and Jun Luo. *ST-SiameseNet: Spatio-Temporal Siamese Networks for Human Mobility Signature Identification.* the 26th SIGKDD conference on Knowledge Discovery and Data Mining, San Diego, CA, August 23 - 27, 2020, (16.8% Acceptance Ratio=216/1279).

[4] [TIST] **Menghai Pan**, Weixiao Huang, Yanhua Li, Xun Zhou, Zhenming Liu, Rui Song, Hui Lu, Zhihong Tian, and Jun Luo. *DHPA: Dynamic Human Preference Analytics Framework - A Case Study on Taxi Drivers' Learning Curve Analysis.* ACM Transactions on Intelligent Systems and Technology (TIST).

[5] [SIGSPATIAL'20] **Menghai Pan**, Weixiao Huang, Yanhua Li, Xun Zhou, Zhenming Liu, Jie Bao, Yu Zheng, and Jun Luo. *Is Reinforcement Learning the Choice of Human Learners? A Case Study of Taxi Drivers.* 28th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Virtual Conference, Tuesday November 3 - Friday November 6, 2020, (22.1% Acceptance Ratio=33/149).

[6] [Urbcomp'18] **Menghai Pan**, Taihui Li, Yanhua Li, Zhi-Li Zhang, and Jun Luo. *Smart Cloud Commuting with Shared Autonomous Vehicles: A First Feasibility Study.* Urbcomp'18: The 7th International Workshop on Urban Computing, August 20, 2018, London, UK. (Held in conjunction with ACM SIGKDD 2018).

[7] [SmartCity'17] **Menghai Pan**, Guanxiong Liu, Yanhua Li, Zhi-Li Zhang, and Jun Luo. *Modeling Urban Trip Demands in Cloud-Commuting System: A Holistic Approach.* SmartCity'17: The 3rd IEEE INFOCOM Workshop on Smart Cities and Urban Computing, May 1-4 2017, Atlanta, GA, USA.

[8] [under submission] **Menghai Pan**, Yanhua Li, Zhi-Li Zhang, and Jun Luo. *Smart Cloud Commuting System* **(Smart Cities)**. Under submission.

[9] [under submission] Weixiao Huang, **Menghai Pan**, Yanhua Li, Rui Song, and Jun Luo. *Reliability Analysis on Inverse Reinforcement Learning* **(Reinforcement Learning)**. Under submission.

▬▬▬ Experience

Summer 2020 **Research Intern**, ***Visa Research, Visa Inc.***, *Palo Alto, CA, US*.
Worked with a team to conduct research on analyzing large-scale transaction data, and delivered innovative technologies and insights to Visa's strategic products and business. Received the review of "***Exceed Expectation***" from the manager at the end of the internship.
Supervisor: Wei Zhang.
Funded by Visa Inc.

Summer 2018 **Research Intern**, ***AI Labs, Didi Chuxing Inc.***, *Beijing, China*.
Analyzed large amounts of data pertaining to driver's driving behavior, which helped the company draft competitive and attractive pricing strategies for drivers.
Supervisor: Dr. Hongtu Zhu & Dr. Jieping Ye.
Funded by Didi Chuxing Inc.

2019, 2020 **Webmaster**, *the 8th and 9th SIGKDD International Workshop on Urban Computing*.
Designed, built and maintained the official websites of the 8th and 9th SIGKDD International Workshop on Urban Computing.

Summer 2019 **Supervisor of Research Experiences for Undergraduates (REU) students**, *Worcester Polytechnic Institute, MA, USA*.
Project: Exploration and Analysis of Large Scale Municipal Data.
Funded by NSF.

2017–2019 **Research Assistant**, *Worcester Polytechnic Institute, MA, USA*.
Researched & developed deep learning solutions for spatio-temporal data.
Supervisor: Dr. Yanhua Li.
Funded by NSF, Didi Chuxing Inc.

Summer 2017 **Supervisor of Research Experiences for Undergraduates (REU) students**, *Worcester Polytechnic Institute, MA, USA*.
Project: Designing Scalable and Interactive Visualization System for Massive Urban Data.
Funded by NSF.

2016–2019 **Teaching Assistant**, *Worcester Polytechnic Institute, MA, USA*.
- CS534: Artificial Intelligence for Graduate Students,
- CS4515: Computer Architecture,
- CS4404: Network Security,
- CS3516: Computer Network.

2014–2015 **Research Intern**, *Data Storage and Information Services Lab, Huazhong University of Science and Technology, Wuhan, China*.
Led a National Training Program of Innovation and Entrepreneurship for Undergraduates in China named *Constructing the Interest Graphs Based on the Data of the Users' behavior*.
Supervisor: Dr. Fuhao Zou.
Funded by HUST.

▬▬▬ Awards

2020 **ACM SIGKDD student registration award**, NSF AND ACM SIGKDD

2020 **Top scorer in Graduate Research Innovation Exchange (GRIE) poster competition** at Worcester Polytechnics Institute, WPI

2019 **Best Applied Data Science Paper award** in SIAM international conference on Data Mining 2019 (SDM'19), SIAM

2019 **TA of the year award** in Computer Science Department at Worcester Polytechnics Institute, WPI CS DEPT.

2019 **SIAM international conference on Data Mining (SDM) travel award**, INTEL AND NSF

2019 **Worcester Polytechnic Institute travel award**, WPI

2016 **Outstanding Undergraduate Thesis of Hubei Province**, HUBEI PROVINCIAL DEPARTMENT OF EDUCATION, CHINA

2016 **Graduate with honor**: Outstanding Student at Huazhong University of Science and Technology, HUST

2015 **Individual Scholarship for Scientific Research**, HUST

2013 **National Encouragement Scholarship**, MINISTRY OF EDUCATION OF CHINA

2012 **Model Student of Academic Records**, HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

2012 **Scholarship of Academic**, HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Poster

- *Dissecting the Learning Strategies of Human Agents*. Graduate Research Innovation Exchange (GRIE). WPI, Worcester, MA. Feb. 12th, 2020.

- *Dissecting the Learning Curve of Taxi Drivers*. Graduate Research Innovation Exchange (GRIE). WPI, Worcester, MA. Feb. 6th, 2019.

- *Smart Cloud Commuting with Shared Autonomous Vehicle*. Graduate Research Innovation Exchange (GRIE). WPI, Worcester, MA. April 24th, 2018.

- *Modeling Urban Trip Demands in Cloud-Commuting System: A Holistic Approach*. Graduate Research Innovation Exchange (GRIE). WPI, Worcester, MA. Feb 8th, 2017.

Computer skills

Programming Python, SQL, Java, C++, C, R, Assembly Language, MATLAB, LaTeX, & Verilog

Frameworks PyTorch, TensorFlow, scikit-learn, NumPy, & SciPy