JUNDI LIU

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EDUCATION

University of Washington *2022*
Ph.D., Industrial and Systems Engineering
Dissertation: Toward Trust-calibrated Customized Vehicle Automation

University of Washington *2018*
M.S., Industrial and Systems Engineering

Shanghai Jiao Tong University *2016*
B.S., Computer Science and Engineering
Thesis: Rule Extraction for Credit Card Fraud Prevention using Machine Learning

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EMPLOYMENT HISTORY

Iowa State University, Ames, IA
Assistant Professor, Department of Industrial and Manufacturing Systems Engineering *2023-present*
Assistant Professor, Human Computer Interaction *2023-present*

University of Michigan, Ann Arbor, MI
Postdoc Research Fellow, Department of Industrial and Operations Engineering *2022-2023*

Honda Research Institute USA, INC., San Jose, CA
Research Intern *2020.09-2020.12*

AWARDS AND HONORS

First Place Winner   IISE Doctoral Colloquium Dissertation Pitch Competition *2022*

PUBLICATIONS

Refereed archival journal publications

1. **Liu, J.**, Boyle, L. N., and Banerjee, A. G. (2022) An Inverse Reinforcement Learning Approach for Customizing Automated Lane Change Systems. *IEEE Transactions on Vehicular Technology* 71(9) : 9261-9271.

2. **Liu, J.**, Hwang, S., Yund, W., Neidig, J. D., Hartford, S. M., Boyle, L. N., and Banerjee, A. G. (2020) A Predictive Analytics Tool to Provide Visibility into Completion of Work Orders in Supply Chain Systems. *Journal of Computing and Information Science in Engineering* 20(3): 031003.

3. **Liu, J.**, Boyle, L. N., and Banerjee, A. G. (2018) Predicting Interstate Motor Carrier Crash Rate Level using Classification Models. *Accident Analysis & Prevention* 120: 211-218.

4. Rahimi, N., **Liu, J.**, Shishkarev, A., Buzytsky, I., and Banerjee, A. G. (2018) Auction Bidding Methods for Multi-Agent Consensus Optimization in Supply-Demand Networks. *IEEE Robotics and Automation Letters* 3(4): 4415-4422.

Refereed archival journal publications: In progress

5. **Liu, J.**, Boyle, L. N., and Banerjee, A. G. (In preparation) Real-time Trust Calibration in Vehicle Automation Using Interactive Reinforcement Learning. Prepare for *IEEE Transactions on Intelligent Transportation Systems*.

6. **Liu, J.**, Han, D.W., Dong, Y., Zhang, H., Zhou, F., Horrey, W., Romo, A., Monlar, L., Tilbury, D., Robert, L., and Yang, X. J. (In preparation) Personalized Drivers' Takeover Performance Prediction Based on Fréchet Distance. Prepare for *Accident Analysis & Prevention*.

Conference proceedings and other non-journal articles

1. **Liu, J.**, Han, D.W., Dong, Y., Zhang, H., Zhou, F., Horrey, W., Romo, A., Monlar, L., Tilbury, D., Robert, L., and Yang, X. J. (2024) Predicting Drivers' Takeover Performance Based on Fréchet Distance Using Machine Learning. *Transportation Review Board 103rd Annual Meeting*.

2. **Liu, J.**, and Boyle, L. N. (2022) Analysis of Driver Behavior in Mixed Autonomous and Non-autonomous Traffic Flows. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 66(1), 1447–1451.

3. **Liu, J.**, Akash, K., Misu, T., and Wu, X. (2021) Clustering Human Trust Dynamics for Customized Real-time Prediction. *2021 IEEE International Intelligent Transportation Systems Conference (ITSC)*. pp. 1705-1712, doi: 10.1109/ITSC48978.2021.9565016.

4. **Liu, J.**, Hwang, S., Yund, W., Boyle, L. N., and Banerjee, A. G. (2018) Predicting Purchase Orders Delivery Times using Regression Models with Dimension Reduction. In *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* 1B: V01BT02A034.

Parts of books (chapters in edited books): In progress

1. Li, M., and **Liu, J.** (In preparation) Measuring Team Performance through Machine Learning. *Team performance assessment and measurement: Theory, methods, and applications*.

Letters, patents, non-refereed papers, technical reports

1. Mohamed, A., **Liu, J.**, Boyle, L. N., and Claudel, C. (2023). FollowMe: Vehicle Behaviour Prediction in Autonomous Vehicle Settings. *arXiv preprint* arXiv:2304.06121.

2. Han, D., **Liu, J.**, Zhou, F., Tilbury, D., Robert, L., Molnar, L., and Yang, X. J. (2023). Measuring and Predicting Drivers' Takeover Readiness and Supporting Takeover Transitions in Automated Driving. *Emerging Technologies Technical Report for AAA Foundation for Traffic Safety*.

3. Akash, K., Misu, T., Wu, X., and **Liu, J.** (2022). Systems and methods for clustering human trust dynamics. *U.S. Patent Application No. 17/687,521.*

OTHER SCHOLARLY ACTIVITIES

Invited lectures, seminars, and workshops

1. Embrace AI as Your Teammate: Toward Trust-aware Autonomous Systems, *Guest lecture, Department of Industrial and Systems Engineering, University at Buffalo, April 2024.*

2. Embrace AI as Your Teammate: Toward Trust-Driven Autonomous Systems, *Department of Industrial and Manufacturing Systems Engineering, Iowa State University, Ames, IA, April 2023.*

3. Transportation Safety, CEE 327: Transportation Engineering Guest Lecture, *Department of Civil and Environmental Engineering, University of Washington, Seattle, WA, Spring 2022.*

4. Embrace AI as Your Teammate: Toward Effective Human-system Integration in Vehicle Automation, *The School of Management, Xi'an JiaoTong University, Xi'an, China, June 2022.*

5. Transportation Safety, CEE 327: Transportation Engineering Guest Lecture, *Department of Civil and Environmental Engineering, University of Washington, Seattle, WA, Winter 2020.*

Conference Presentations

1. Predicting Drivers' Takeover Performance Based on Fréchet Distance Using Machine Learning, *Transportation Research Board, Washington D.C., January 2024.*

2. Toward Trust-calibrated Customized Vehicle Automation, *the Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Seattle, WA, October 2022.*

3. Customized Automated Lane Change Systems to Driving Styles using Inverse Reinforcement Learning, *The Institute of Industrial & Systems Engineers (IISE) Annual Conference, Seattle, WA, May 2022.*

4. Clustering Human Trust Dynamics for Customized Real-time Prediction, *24th IEEE International Conference on Intelligent Transportation, Indianapolis, IN, September 2021.*

5. Identifying Human Driving Styles in Urban Environments Through Time Series Data Analytics, *INFORMS Annual Meeting, Seattle, WA, October 2019.*

6. The Relationship between Driver Performance and Traffic Environments using Functional Data Analysis, *Joint Statistical Meeting, Denver, CO, July 2019.*

7. Predicting Purchase Orders Delivery Times using Regression Models with Dimension Reduction, *International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Quebec City, Quebec, Canada, August 2018.*

8. A Step Toward Predictive Modeling of Supply Chain Systems, *The IISE Annual Conference, Orlando, FL, May 2018.*

Advised Abstracts, Posters and Presentations
Note: presenter in underline.

1. M. Amrollahi, A. Bolt, B. Reiss, R. Wangira, and J. Liu. (2024) Predict and Model Human Trust for Automated Vehicles in Manufacturing Plants. **First Place Winner** in *The 12th Annual IMSE Student Research Symposium.*

2. N. K. Ilangovan, and J. Liu. (2024) The future of mobility: Bridging all road users in a multiplayer VR testbed. **Second Place Winner** of best overall quality of research in *ISU HCI's 20th Anniversary Poster Presentation.*

3. A. Bolt, and B. Rreiss (2024) Predicting and Optimizing Workers' Trust Toward Autonomous Vehicles in Manufacturing Plants. Accepted for presentation at *the National Conference on Undergraduate Research (NCUR).*

Professional society memberships

Member, Institute of Industrial & Systems Engineers (IISE) *2017-present*
Member, Human Factors and Ergonomics Society (HFES) *2017-present*

Member, Institute of Electrical and Electronics Engineers (IEEE)	*2017-present*
Member, American Statistical Association (ASA)	*2019-present*
Member, Institute for Operations Research and the Management Sciences (INFORMS)	*2019-present*
Member, American Society of Mechanical Engineers (ASME)	*2018-2020*
Member, UW-Human Factors and Ergonomics Society student chapter	*2019-2022*
Member, UW-INFORMS student chapter student chapter	*2019-2022*

Referee/Reviewer

Source	Total
Peer-reviewed journal articles	
Accident Analysis and Prevention	1
Human Factors	1
IEEE Transactions on Intelligent Transportation Systems	1
Frontiers in Robotics and AI	1
J. of Intelligent Transportation System	1
IEEE Transactions on Human-Machine Systems	2
IEEE Transactions on Neural Networks and Learning Systems	1
International Journal of Environmental Research and Public Health	1
IISE Transactions	1
Production and Operations Management	1
Conference proceedings/abstracts	
Human Factors & Ergonomics Society Conference	6
Automotive User Interfaces and Interactive Vehicular Applications	3

STUDENT ADVISORY

Current Doctoral Students

1. Mobina Amrollahi, Chair, IMSE, began Fall 2023.

2. Aparna Joshi, co-Chair (with Anuj Sharma), began Fall 2022.

Current Master Students

1. Nandha Kumar Ilangovan, Chair, HCI, began Fall 2023.

Other significant student supervision

1. Membership on PhD degree committees

   - Jiwon Kim, IMSE, advisor: Michael Dorneich, current.

   - Yvonne Farah, IMSE, advisor: Michael Dorneich, current.

   - Mohammad Al-Daraghmeh, IMSE, advisor: Richard Stone, current.

2. Membership on MS degree committees

   - Nicholas Matthews, HCI and CE, advisor: Eliot Winer, current.

3. Undergraduate Research Supervision

- 2024: Abigail Bolt (IMSE), Brian Reiss (CSE), Rindirisia Wangira (IMSE)
- 2023: Abigail Bolt (IMSE), Brian Reiss (CSE)

RESEARCH ACTIVITIES

Designing Value-driven Explainable AI for Responsible Robots in Manufacturing Plant   *2024*
Sole PI: Jundi Liu; Supported by ISU IMSE Exploratory Research Program ($10,157)

DOCUMENTATION OF TEACHING EFFECTIVENESS

Iowa State University

All students were asked to rate the courses on a scale of 0-5 [0 = strongly disagree/poor, 5 = strongly agree/excellent]. The survey assessed various dimensions of the course and instructor, including feedback quality, assistance provided, learning environment, organization, and overall teaching effectiveness.

Course	Title	Quarter	Role	Credits	Response	Mean	Median
IE 148	Information Engr.	2024S	Co-Instructor	3	13/25 (52%)	4.59	5
IE 487/587	Big Data Analytics & Opt.	2023F	Instructor	3	7/11 (64%)	4.67	5

University of Washington

All students were asked to rate the courses on a scale of 0-5 [0 = very poor, 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent]. The survey assessed various dimensions of the course and instructor, including the overall quality of the course, the course content, the instructor's contribution, and the instructor's effectiveness in teaching the subject matter. The overall summative rating represents the combined responses of students to the four global summative items.

Course	Title	Quarter	Role	Credits	Response	Mean	Median
IND E 315	Prob. & Stat. for Engrs.	2019S	Instructor	3	13/41 (32%)	NA	4.2
IND E 410	Linear & Network Prog.	2018F	TA	3	14/66 (21%)	NA	4.4

SERVICE

Panelist, ISU HCI 20th Anniversary Young Faculty Panel,	*2024*
Program Committee Member, MultiTTrust workshop at Human-Agent Interaction Conference	*2023*
ISU IMSE Space, Facilities and Safety Committee	*2023-present*
UM IOE Women in Science and Engineering (WISE) Camp	*2023*