NA DU

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CURRENT POSITION

Assitant Professor, University of Pittsburgh Starting Sep. 2021
Department of Informatics and Networked Systems
School of Computing and Information

EDUCATION

University of Michigan, Ann Arbor, MI Aug. 2017 - Apr. 2021
Ph.D., Industrial & Operations Engineering
Graduate Certificate in Data Science, Michigan Institute for Data Science
– Dissertation: Predicting drivers' takeover performance and designing an adaptive in-vehicle alert system in conditionally automated driving
– Advisor: Dr. X. Jessie Yang
– Committee: Drs. Nadine Sarter, Yili Liu, and Lionel Robert

Zhejiang University, Hangzhou, China Aug. 2012 - Jun. 2016
B.S., Psychology, Graduate with honors
– Thesis: Reducing racial bias in empathy by challenging race concept: an electrophysiological study

RESEARCH INTERESTS

Human factors (HF), human-computer interaction (HCI), computational modeling of human behaviors, human-centered design, wearable technology, neuroergonomics, intelligent transportation systems, trust-driven human-automation interaction

AWARDS AND HONORS

Towner Prize for Distinguished Academic Achievement, University of Michigan	2021
IOE Outstanding Student Award, University of Michigan	2021
HFE WOMAN Rising Star Award	2020
HFES Student Member with Honors Award	2020
Metropolitan Detroit Society for Information Display Academic Award	2020
Rackham Predoctoral Fellowship, University of Michigan (85 awardees/year)	2020 - 2021
Rackham International Students Fellowship, University of Michigan (25 awardees/year)	2018 - 2019
Deans and Engineering Graduate Fellowships, University of Michigan ($10,200)	2017 - 2018
Mitacs Research Award (Awarded to 476 foreign interns in Canada: $1,500)	Jun. 2015
China Scholarship Council Scholarship (Awarded to 125 undergraduates: $3,000)	Jun. 2015
Second Prize of Research and Innovation Scholarship, Zhejiang University	2014 - 2015
Outstanding Undergraduate Scholarship, Zhejiang University	2012 - 2015

PEER-REVIEWED PUBLICATIONS

Journal Publications

J1. Wu, C., Zhang, W., You, X., **Du, N.** (2021). Which accuracy levels of positioning technologies do drivers really need in connected vehicle settings for safety?. *Accident Analysis Prevention*, 106106. DOI: 10.1016/j.aap.2021.106106

J2. **Du, N.**, Zhou, F., Pulver E., Tilbury, D. M., Robert, L. P., Pradhan, A. K., & Yang, X. J. (2020). Predicting Driver Takeover Performance in Conditionally Automated Driving. *Accident & Analysis Prevention*. 148, 105748. DOI: 10.1016/j.aap.2020.105748

J3. **Du, N.**, Yang, X. J., & Zhou, F. (2020). Psychophysiological responses to takeover requests in conditionally automated driving. *Accident & Analysis Prevention*. 148, 105804. DOI: 10.1016/j.aap.2020.105804

J4. **Du, N.**, Zhou, F., Pulver, E., Tilbury, D. M., Robert Jr, L. P., Pradhan, A. K., & Yang, X. J. (2020). Examining the effects of emotional valence and arousal on takeover performance in conditionally automated driving. *Transportation Research Part C: Emerging Technologies*. 112, 78-87. DOI: 10.1016/j.trc.2020.01.006

J5. **Du, N.**, Huang, K. Y., & Yang, X. J. (2019). Not All Information Is Equal: Effects of disclosing different types of likelihood information on trust, compliance and reliance, and task performance in human-automation teaming. *Human Factors*. 62 (6), 987-1001. DOI: 10.1177/0018720819862916

J6. **Du, N.**, Haspiel, J., Zhang, Q., Tilbury, D., Pradhan, A. K., Yang, X. J., & Robert Jr, L. P. (2019). Look who's talking now: Implications of AV's explanations on driver's trust, AV preference, anxiety and mental workload. *Transportation Research Part C: Emerging Technologies*, 104, 428-442. DOI: 10.1016/j.trc.2019.05.025

J7. Luo, S., Han, X., **Du, N.**, & Han, S. (2018). Physical coldness enhances racial in-group bias in empathy: Electrophysiological evidence. *Neuropsychologia*. 116, 117-125. DOI: 10.1016/j.neuropsychologia.2017.05.002

J8. **Du, N.**, Yu, K., Ye, Y., & Chen, S. (2017). Validity study of Patient Health Questionnaire-9 items for Internet screening in depression among Chinese University students. *Asia-Pacific Psychiatry*, 9(3), e12266. DOI: 10.1111/appy.12266

J9. Sheng, F., **Du, N.**, & Han, S. (2016). Degraded perceptual and affective processing of racial out-groups: An electrophysiological approach. *Social Neuroscience*, 1-9. DOI: 10.1080/17470919.2016.1182944

Conference Proceedings

C1. **Du, N.**, Kim, J., Zhou, F., Pulver E., Tilbury, D., Robert, L. P., Pradhan, A., & Yang, X. J. (2020). Evaluating Effects of Cognitive Load, Takeover Request Lead Time, and Traffic Density on Drivers' Takeover Performance in Conditionally Automated Driving. *12th International Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI '20)*. September 21–22, 2020, Virtual Event, DC, US. DOI: 10.1145/3409120.3410666

C2. **Du, N.**, Kim, J., Zhou, F., Tilbury, D., Robert, L. P., Pradhan, A., & Yang, X. J. (2020). Examining effects of scenario type and vehicle speed on takeover readiness and performance in conditionally automated driving. *In Proceedings of the 64th Annual Meeting of the Human Factors and Ergonomics Society (HFES)*. Chicago, IL. October. DOI: 10.1177/1071181320641482

C3. **Du, N.**, Zhou, F., Pulver E., Tilbury, D. M., Robert, L. P., Pradhan, A. K., & Yang, X. J. (2020). Predicting Takeover Performance in Conditionally Automated Driving. *In Proceedings of the 2020 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. Honolulu, HI. April. DOI: 10.1145/3334480.3382963

C4. **Du, N.**, Ayoub, J., Zhou, F., Pradhan, A., Robert, L. P., Tilbury, D., Pulver E., & Yang, X. J. (2019). Examining effects of driver's emotion on takeover readiness and performance in

highly automated driving. *In Proceedings of the 63rd Annual Meeting of the Human Factors and Ergonomics Society (HFES).* Seattle, WA. October. DOI: 10.1177/1071181319631391

C5. Luo, R., **Du, N.**, Huang, K. Y., & Yang, X. J. (2019). Enhancing Transparency in Human-autonomy Teaming via the Option-centric Rationale Display. *In Proceedings of the 63rd Annual Meeting of the Human Factors and Ergonomics Society (HFES).* Seattle, WA. DOI: 10.1177/1071181319631366

C6. **Du, N.**, Zhang Q., & Yang, X. J. (2018). Effects of automation reliability and reliability information on trust, dependence and dual-task performance. *In Proceedings of the 62nd Annual Meeting of the Human Factors and Ergonomics Society (HFES).* Philadelphia, PA. DOI: 10.1177/1541931218621041

C7. Haspiel, J., **Du, N.**, Meyerson, J., Robert Jr, L. P., Tilbury, D., Yang, X. J., & Pradhan, A. K. (2018, March). Explanations and Expectations: Trust Building in Automated Vehicles. *In Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction* (pp. 119-120). ACM. DOI: 10.1145/3173386.3177057

C8. **Du, N.**, Tilbury, D., Robert, L., Pradhan, A. & Yang, X. J., (2018). A Cross-Cultural Study of Trust Building in Autonomous Vehicles. *The Conference on Autonomous Vehicles in Society: Building a Research Agenda*, East Lansing, MI, May 18-19.

C9. Zhang, Q., **Du, N.**, Yang, X. J., & Robert, L.(2018). Trust in AVs: The Impact of Expectations and Individual Differences. *The Conference on Autonomous Vehicles in Society: Building a Research Agenda*, East Lansing, MI, May 18-19.

Manuscripts Under Review

1. Jackie Ayoub*, **Du, N.***, Yang, X. J., & Zhou, F. (under review). Predicting driver takeover time in conditionally automated driving. *IEEE Transactions on Intelligent Transportation Systems.* (*Equal contribution)
2. Luo, R., **Du, N.**, & Yang, X. J. (under review). Enhancing autonomy transparency: an option-centric rationale approach. *International Journal of Human-Computer Interaction.*
3. **Du, N.**, Zhou, F., Tilbury, D. M., Robert, L. P., & Yang, X. J. (under review). Behavioral and physiological changes to takeovers in conditionally automated driving: the roles of scenario type and vehicle speed. *IEEE Transactions on Intelligent Transportation Systems.*

PRESENTATIONS

Conference Presentation

1. **Du, N.**, Kim, J., Zhou, F., Pulver E., Tilbury, D., Robert, L. P., Pradhan, A., & Yang, X. J. (2020). Evaluating Effects of Cognitive Load, Takeover Request Lead Time, and Traffic Density on Drivers' Takeover Performance in Conditionally Automated Driving. *Presented at 12th International Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI '20).* September 21–22, 2020, Virtual Event, DC, US.
2. **Du, N.** (2020). Predicting drivers' takeover performance and designing an adaptive in-vehicle alert system. *Presented at AutomotiveUI '20 doctoral colloquium.* September 20, 2020, Virtual Event, DC, US.
3. **Du, N.**, Kim, J., Zhou, F., Tilbury, D., Robert, L. P., Pradhan, A., & Yang, X. J. (2020). Examining effects of scenario type and vehicle speed on takeover readiness and performance in conditionally automated driving. *Presented at the 64th Annual Meeting of the Human Factors and Ergonomics Society (HFES).* Virtual Event, Chicago, IL. October.

4. **Du, N.**, Ayoub, J., Zhou, F., Pradhan, A., Robert, L. P., Tilbury, D., Pulver E., & Yang, X. J. (2019). Examining effects of driver's emotion on takeover readiness and performance in highly automated driving. *Presented at the 63rd Annual Meeting of the Human Factors and Ergonomics Society (HFES)*. Seattle, WA. October.
5. **Du, N.**, Zhang Q., & Yang, X. J. (2018). Effects of automation reliability and reliability information on trust, dependence and dual-task performance. *Presented at the 62nd Annual Meeting of the Human Factors and Ergonomics Society (HFES)*. Philadelphia, PA. October.

Poster Presentation

1. **Du, N.**, Kim J., Zhou, F., Tilbury, D., Pradhan, A., Robert, L. P., & Yang, X. J. (2019). Taking over control from highly automated vehicles in complex road environments: the role of drivers' cognitive load. *Presented at the University of Michigan Engineering Graduate Symposium*, Ann Arbor, MI, November.
2. Luo, R., **Du, N.**, Huang, K. Y., & Yang, X. J. (2019). Enhancing autonomy transparency: an option-centric rationale approach. *Presented at 2019 Michigan AI Symposium*, October.
3. **Du, N.**, Ayoub, J., Zhou, F., Pradhan, A., Robert, L. P., Tilbury, D., & Yang, X. J. (2019). Examining effects of driver's emotion on takeover readiness and performance in highly automated driving. *Presented at the 3rd IAVSD Workshop on Dynamics of Road Vehicles: Connected and Automated Vehicles*, Ann Arbor, MI, April 28-30.
4. **Du, N.**, Robert, L. P., Pradhan, A., Tilbury, D., & Yang, X. J. (2018). A cross-cultural study of trust building in autonomous vehicles. *Presented at the Conference on Autonomous Vehicles in Society: Building a Research Agenda*, East Lansing, MI, May 18-19.
5. Zhang, Q., **Du, N.**, Yang, X. J., & Robert, L. (2018). Trust in AVs: The Impact of Expectations and Individual Differences. *Presented at the Conference on Autonomous Vehicles in Society: Building a Research Agenda*, East Lansing, MI, May 18-19.
6. Haspiel, J., **Du, N.**, Meyerson, J., Robert Jr, L. P., Tilbury, D., Yang, X. J., & Pradhan, A. K. (2018). Explanations and Expectations: Trust Building in Automated Vehicles. *Presented at the 2018 ACM/IEEE International Conference on Human-Robot Interaction*, Chicago, IL, March.
7. **Du, N.**, Zhang, Q., & Yang, X. J. (2017). Effects of automation reliability and reliability information on trust, dependence and dual-task performance. *Presented at the University of Michigan Engineering Graduate Symposium*, Ann Arbor, MI, November.
8. **Du, N.**, & Han, S. (2017). Challenging the concept of race reduces neural coding of same-race versus other-race faces. *Presented at The 10th Annual Meeting of the Social and Affective Neuroscience Society*, Los Angeles, CA, March.
9. **Du, N.**, Kehoe D., & Fallah M. (2015). Modeling salience from saccade curvature. *Presented at Natural Sciences and Engineering Research Council (NSERC) Poster Day*, Toronto, ON, August.

RESEARCH AND WORK EXPERIENCE

Honda Research Institute, San Jose, CA Nov. 2020 - Mar. 2021
Research Intern

– Design, implement, and evaluate in-vehicle human-machine interfaces
– Model drivers' cognitive process when interacting with the system
– Develop performance metric and assess the system based on drivers' behavior and vehicle operations

University of Michigan, Ann Arbor, MI May. 2017 - Present
Interaction and Collaboration Research Lab
Graduate Student Research Assistant. Advisor: Dr. X. Jessie Yang

– Project 1: Predicting drivers' takeover performance using physiological data via machine learning algorithms and then developing an adaptive in-vehicle alert system in automated driving
– Project 2: Examining drivers' takeover performance from highly automated driving as a function of drivers' cognitive load, emotions, vehicle capability, and driving environments
– Project 3: Investigating trust calibration in human-automation teaming by increasing system transparency (e.g. providing action explanations, disclosing likelihood information, teaching Bayesian reasoning, and designing an option-centric rationale display)

University at Buffalo, SUNY, Buffalo, NY Aug. 2016 - May. 2017
Cognitive System Lab
Graduate Student Research Assistant. Advisor: Dr. Changxu Wu

– Project: Examining effects of location accuracy of Global Positioning System on driving performance and trust in connected vehicles

Peking University, Beijing, China Sept. 2015 - Jun. 2016
Culture and Social Cognitive Neuroscience Lab
Undergraduate Research Assistant. Advisor: Dr. Shihui Han

– Project: Investigating perceptual, affective and neural processing of racial out-groups with an electrophysiological approach

York University, Toronto, ON Jul. 2015 - Sept. 2015
Visual Perception and Attention Lab
Research Intern. Advisor: Dr: Mazyar Fallah

– Project: Modeling salience from saccade curvature during eye movements

Zhejiang University, Hangzhou, China Jun. 2014 - Sept. 2014
Human Factors Engineering Lab
Undergraduate Research Assistant. Dr. Zaifeng Gao

– Project: The influence of feedback style (human-figure feedback vs. cursor) on user experience in gestural interaction: A Kinect-based usability study

TEACHING

Course Instructor
– INFSCI 3350: Doctoral Seminar, University of Pittsburgh Fall 2021
– INFSCI 2300: Human Information Processing, University of Pittsburgh Spring 2022

Module Instructor
– IOE 591: Ergonomics Research Methods Laboratory, University of Michigan Winter 2018-2020

Guest Speaker
– IOE 836: Human Performance Seminar, University of Michigan Fall 2018, 2019
– IOE 491: User Interface/User Experience (UI/UX) Design, University of Michigan Fall 2020
– IMSE 317: Engineering Probability and Statistics, University of Michigan-Dearborn Fall 2020

Graduate Student Instructor
– PSY: Positive Psychology, Zhejiang University Fall 2014

PROFESSIONAL AFFILIATION

Member, ACM SIGCHI 2020 - Present
Member, Transportation Research Board 2020 - Present
Member, IEEE Robotics & Automation Society 2018 - Present
Member, Human Factors and Ergonomics Society 2016 - Present

SERVICE AND LEADERSHIP

Professional Society Service

– Reviewer, Transportation Research Part C: Emerging Technologies 2020 - Present
– Reviewer, Transactions on Intelligent Transportation Systems 2020 - Present
– Reviewer, International Journal of Human-Computer Interaction 2020 - Present
– Reviewer, Behaviour & Information Technology 2020 - Present
– Reviewer, IEEE Access 2020 - Present
– Reviewer, Transactions on Human-Robot Interaction 2021 - Present
– Reviewer, Human Factors and Ergonomics Society (HFES) Annual Meeting 2018 - Present
– Reviewer, The CHI Conference on Human Factors in Computing Systems 2020 - Present
– Reviewer, International Conference on Information Systems 2020 - Present
– Reviewer, The Conference on Pervasive and Ubiquitous Computing (UbiComp) 2020 - Present
– Reviewer, The Annual International Conference on Human Robot Interaction 2018 - 2019
– Newsletter editor, HFES Aging and Surface Transportation Technical Groups 2020 - 2021
– Communication director, HFES Augmented Environment Technical Group 2020
– Committee member, ACM International Conference on AutomotiveUI 2021 - Present
– Committee member, HFES Diversity Committee 2019 - Present
– Committee member, HFES Fellows Profile Task Force 2019 - Present
– Lead organizer, HFES Annual Meeting Student Career Day Oct. 2020
– Session moderator, International Conference on Automotive User Interfaces Sept. 2020
– Session chair, HFES Annual Meeting Oct. 2019
– Student volunteer, HFES Annual Meeting Oct. 2019

University-related Service

– President, UM-HFES student chapter Sept. 2019 - Aug. 2020
– President Elect, UM-HFES student chapter Sept. 2018 - Aug. 2019
– Web master, UM-HFES student chapter Sept. 2017 - Aug. 2018
– Volunteer, UM-IOE Prospective Student Visit Day 2018 - 2020
– Representative, UM-IOE Student Leadership Board Sept. 2017 - Aug. 2018