Nade Liang

905 Canton Ave, Lubbock, TX 79409 • (806) 834-5348 • nade.liang@ttu.edu

ACADEMIC POSITIONS

Assistant Professor Lubbock, TX
Department of Industrial, Manufacturing, & Systems Engineering
Texas Tech University (TTU) Fall 2024

Research Assistant West Lafayette, IN
School of Industrial Engineering
Purdue University 2018 – 2023

Research Assistant West Lafayette, IN
Lyles School of Civil Engineering
Purdue University 2022

EDUCATION

Purdue University West Lafayette, IN
Ph.D., School of Industrial Engineering May 2024
Dissertation: *Automation-To-Human Transition of Control: An Examination of Pre-Transition Behaviors That Influence Readiness to Take Over from Conditionally Automated Vehicles*
Advisor: Brandon Pitts

Purdue University West Lafayette, IN
Graduate Certificate in Applied Statistics, Department of Statistics May 2022

Purdue University West Lafayette, IN
M.S.I.E., School of Industrial Engineering August 2019
Thesis: *Assessing the Effects of Cognitive Secondary Task and Automation Type on Changes in Heart Rate: Implications for the Potential Use of Nanotechnology*
Advisor: Brandon Pitts

Beihang University Beijing, China
B.Eng., School of Transportation Science and Engineering June 2017
Senior Design: *Assessing Cockpit Seat Pressure Distribution and Comfort Using Finite Element Analysis (FEA)*

RESEARCH EXPERIENCE

Westat Rockville, MD
Transportation Research Intern June 2023 – August 2023

- Design and conducted on-road human subject experiments on an instrumented vehicle

- Perform human behavior data coding, cleaning and statistical analysis in R
- Evaluate the effectiveness of different human-machine interface for transferring system situation knowledge to driver
- Collaborate with research partners and researchers from NHTSA and UW Madison
- Contribute to writing response proposals to NHTSA Request for Proposal (RFP)
- Develop a computer-vision-based automatic driver eye glance coding program

Purdue University West Lafayette, IN

Graduate Research Assistant, School of Industrial Engineering August 2019 – May 2022

- Design and conduct human subject experiments on the NADS miniSim driving simulator
- Conduct a systematic literature review on physiological measurements of situation awareness
- Assess drivers' cognitive state using eye-tracking, electroencephalography (EEG), heart rate variability (HRV), and skin conductance metrics
- Evaluate the effects of driver behaviors during SAE Level 3 driving on takeover readiness
- Build physiological-measurement-based situation awareness machine learning prediction models
- Collaborate with industry partners and researchers from Ford Motor Company
- Evaluate older adult users' skill transfer in video conferencing platforms through online user interactions

Purdue University West Lafayette, IN

Graduate Research Assistant, Lyles School of Civil Engineering June 2022 – August 2022

- Conduct focus group studies to understand older adults' (65+) perception and needs of shared autonomous vehicles
- Perform quantitative analysis on video recordings, questionnaires, and qualitative meta-analysis on interview transcripts
- Lead four undergraduate research interns in human subject experiments and data analysis practices
- Present research findings and write technical reports to the industry sponsor management team

Purdue University West Lafayette, IN

Graduate Student Researcher, School of Industrial Engineering August 2018 – May 2019

- Evaluate the effect of cognitive workload on driving performance in semi-autonomous driving
- Use novel nanotechnology sensor in measuring heart rate and heart rate variability in predicting drivers' cognitive workload

PUBLICATIONS & PRESENTATIONS

Peer-Reviewed Journal Articles

1. **Liang, N.,** Yang, J., Yu, D., Prakah-Asante, K. O., Curry, R., Blommer, M., Swaminathan, R. & Pitts, B. J. (2021). Using eye-tracking to investigate the effects of pre-takeover visual engagement on situation awareness during automated driving. *Accident Analysis & Prevention*, 157, 106143.
2. Zhang, T., Yang, J., **Liang, N.,** Pitts, B. J., Prakah-Asante, K. O., Curry, R., Duerstock, B. S., Wachs, J. P. & Yu, D. (2020). Physiological measurements of situation awareness: a systematic review. *Human Factors*, 0018720820969071.
3. Yang, J., **Liang, N.,** Pitts, B.J., Prakah-Asante, K.O., Curry, R., Duerstock, B., Wachs, J. & Yu, D. (2023) An eye-fixation related electroencephalography (EEG) technique for predicting situation awareness: Implications for driver state monitoring systems. *Human Factors.*
4. Yang, J., **Liang, N.,** Pitts, B.J., Prakah-Asante, K.O., Curry, R., Duerstock, B., Wachs, J. & Yu, D (2023). Multi-modal Sensing and Computational Intelligence for Situation Awareness Classification in Autonomous Driving. *IEEE Transactions on Human-Machine Systems*.
5. **Liang, N.**, Connaughton, S.L., Pitts, B.J. & Gkritza, K. Understanding Older Adults' Needs and Perceptions of Shared Autonomous Vehicle Interior Features: A Focus Group and User Enactment Study. *Applied Ergonomics.*
6. **Liang, N.**, Li, G., Werner, L. & Pitts, B.J. Does my past influence my future? Investigating whether older adults' prior knowledge of one videoconferencing platform transfers to new platforms. *Universal Access in the Information Society.*

Peer-Reviewed Conference Proceedings

1. **Liang, N.**, Lim, C., Yu, D., Prakah-Asante, K. O., & Pitts, B. J. (2023). Predicting Automated Vehicle Takeover Decisions During the Nighttime. Accepted in *Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 67).*
2. **Liang, N.**, Yang, J., Yu, D., Prakah-Asante, K. O., Curry, R., Blommer, M., Swaminathan, R. & Pitts, B. J. (2022). The Effects of Non-Driving-Related Task Engagement on Automated Driving Takeover Performance During the Nighttime. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 66).*
3. Yang, J., **Liang, N.,** Pitts, B. J., Yu, D. (2022). Assessment of Situation Awareness in Automated Driving Using Eye-fixation Related EEG Analysis. *Accepted in Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 66).*
4. **Liang, N.,** Yang, J., Prakah-Asante, K. O., Curry, R., Blommer, M., Swaminathan, R. & Pitts, B. J. (2021, September). Look up! An eye-tracking study on situation awareness

during automated vehicle takeover. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 65, No. 1, pp. 1071-1071).

5. Yang, J., **Liang, N.,** Prakah-Asante, K. O., Curry, R., Blommer, M., Swaminathan, R. & Yu, D. (2021, September). Situation awareness classification using multi-modal sensing in automated driving. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 65, No. 1, pp. 52-52).
6. **Liang, N.,** & Pitts, B. J. (2019, November). The Effect of Secondary Cognitive Task Difficulty on Headway Maintenance and Perceived Workload While Using Lane Keeping Systems. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 63, No. 1, pp. 2011-2015).
7. Huang, G., **Liang, N.,** Wu, C., & Pitts, B. J. (2019, November). The impact of mind wandering on signal detection, semi-autonomous driving performance, and physiological responses. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 63, No. 1, pp. 2051-2055).

Invited Lectures

1. **Liang, N.** (2024) Macroergonomics & Safety and Accident Prevention. Presentation given to the ISE210 - Human Factors/Ergonomics course at San Jose State University. San Jose, CA. November.
2. **Liang, N.** (2024) Human Factors in Driving. Presentation given to the IE530 - Intro to Human Factors course at University at Buffalo. Buffalo, NY. February.
3. **Liang, N.** (2023) Human Motor Control & Learning. Presentation given to the IE/PSY577 - Human Factors in Engineering course at Purdue University. West Lafayette, IN. November.
4. **Liang, N.** (2023) Physical & Cognitive Ergonomics in Manufacturing. Presentation given to IE/MGMT 590 Digital Transformation in Industrial Business course at Purdue University. West Lafayette, IN. October
5. **Liang, N.** (2023) Improving Perception of Information & Augmenting Usefulness of Devices. Presentation given to the IE590 - Human Factors of Gerontechnology course at Purdue University. West Lafayette, IN. April

GRANTS & AWARDS

First Place Presentation, Purdue Industrial Engineering Research Symposium 2023
- *Accessibility Needs in Shared Autonomous Vehicles (SAV) for Older Adult Riders: A Focus Group Study*

Purdue University Graduate Student Travel Grant 2023
HFES Perception and Performance TG (PPTG) Student Research Grant 2021
HFES Augmented Cognition TG (ACTG) Honorable Mention on Student Research 2021
- *Title: Assessment and Prediction of Situation Awareness During Takeover in Semi-Autonomous Driving at Nighttime*

HFES Surface Transportation TG (STTG) Best Paper Finalist 2022
Purdue University College of Engineering Conference Travel Grant 2022

HFES Student Member with Honors Award 2022
Lifesavers Traffic Safety Scholar 2022
Travel Grant, School of Industrial Engineering, Purdue University 2021
First Place, HFES National Ergonomics Month Contest 2021
Lee A. Chaden Fellowship in Industrial Engineering 2020
HFES Honor Student of Purdue Award 2020
Travel Grant, School of Industrial Engineering, Purdue University 2019
Student Presenter Award, 63rd HFES Annual Meeting 2019
First-year Graduate Student Award, 63rd HFES Annual Meeting 2019

MENTORING

Ph.D. Students (Committee Chair)
Peihang Li, Industrial Engineering
Md Kaiser Hamid Munna, Industrial Engineering

Ph.D. Students (Committee Member)
Viviana Dos Santos, Industrial Engineering
Austin Vaughn, Industrial Engineering

SERVICE & LEADERSHIP

Professional Services

Journal Reviewer

- *Applied Ergonomics*
- *Accident Analysis & Prevention*
- *Ergonomics*
- *Ergonomics in Design*
- *International Journal of Human-Computer Interaction*
- *International Journal of Industrial Ergonomics*
- *IEEE Transactions on Affective Computing*
- *IEEE Transaction on Human-Machine Systems*
- *Transportation Research Part F: Traffic Psychology and Behaviour*

Conference Proceedings Reviewer 2019-Present

- *Human Factors and Ergonomics Society (HFES) Annual Meeting*

Program Chair 2023-Present

- *HFES Perception and Performance Technical Group (PPTG)*

Electronic Communication Co-Chair 2021-2023

- *HFES Perception and Performance Technical Group (PPTG)*

HFES Student Affairs Committee Member 2021-Present

TEACHING EXPERIENCE

Instructor – Texas Tech University Lubbock, TX
IE 4301/5301 Engineering Design for People/Applied Industrial Ergonomics Fall 2024

Teaching Assistant - Purdue University West Lafayette, IN

IE 486 Work Analysis & Design II — Fall 2018, Spring 2019
- Instructor: Dr. Barrett Caldwell, Dr. Brandon Pitts

IE 535 Linear Programming — Fall 2018
- Instructor: Dr. Andrew Liu

IE 559 Cognitive Engineering of Interactive Software — Fall 2022
- Instructor: Dr. Brandon Pitts

IE 578 Applied Ergonomics — Fall 2022
- Instructor: Dr. Vincent Duffy

PROFESSIONAL AFFILIATIONS

Human Factors and Ergonomics Society (HFES) — 2018-Present
Institute of Industrial and Systems Engineers (IISE) — 2021-Present
ACM Special Interest Group on Computer-Human Interaction (SIGCHI) — 2021-Present

CERTIFICATION

Associate Human Factors Professional (BCPE) — 2023