Approved by the Regents
May 18, 2023

PROMOTION RECOMMENDATION
The University of Michigan-Dearborn
College of Engineering and Computer Science

Feng Zhou, assistant professor of industrial and manufacturing systems engineering, Department of Industrial and Manufacturing Systems Engineering, College of Engineering and Computer Science, is recommended for promotion to associate professor of industrial and manufacturing systems engineering, with tenure, Department of Industrial and Manufacturing Systems Engineering, College of Engineering and Computer Science.

Academic Degrees:

Ph.D.	2014	Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA
Ph.D.	2011	Human Factors Engineering, Nanyang Technological University, Singapore
M.S.	2007	Computer Engineering, Zhejiang University, Hangzhou, China
B.S.	2005	Computer Engineering, Ningbo University, Ningbo, China

Professional Record:

2017-present	Assistant Professor, Industrial and Systems engineering, University of Michigan-Dearborn
2015-2017	Consumer Neuromarketing Scientist, MediaScience, Austin, TX

Summary of Evaluation:

Teaching: Professor Zhou is an excellent teacher. Professor Zhou taught three undergraduate courses in the bachelor's programs of industrial and systems engineering, manufacturing engineering, and human-centered engineering design. At the graduate level, he taught three courses, two of which he developed for the master's in human-centered design and engineering program, and the other of which he updated significantly. His overall instructor evaluations have been high, averaging 4.12/5.0.

Professor Zhou has advised one doctoral student who has graduated. He is currently supervising another Ph.D. student and is co-advising two students in their Ph.D. research.

Research: Professor Zhou is a highly regarded researcher in the area of human-centered design. His scholarly output is outstanding. Since joining the department in 2017, Professor Zhou published 33 peer-reviewed journal papers. His work is widely cited (4300+ paper citations per Google Scholar) and well-respected. The venues in which he has chosen to publish his research are excellent and include publications in top journals in his field, such as *Transportation Research Part F: Traffic Psychology and Behavior*, *Expert Systems with Applications*, *IEEE Transactions on Intelligent Transportation Systems*, *IEEE Transactions on Human-Machine Systems*, and *Accident Analysis & Prevention*. Professor Zhou has been an excellent collaborator. He has been an active participant in several research efforts with the University of Michigan faculty at the Ann Arbor campus.

Professor Zhou has been successful in attracting external support for his research. As a principal and co-principal investigator, he secured nine funded grants and contracts while at UM-Dearborn for a total of more than $1.7 million. The external letters are consistent in their assessment of the quality and impact of his work as well as long-term research promise.

Recent and Significant Publications:

Song, X., Zhou, F., Frangi, A.F., Cao, J., Xiao, X., Lei, Y., Wang, T., Lei, B. "Multi-Center and Multi-Channel Pooling GCN for Early AD Diagnosis Based on Dual-Modality Fused Brain Network," *IEEE Transactions on Medical Imaging*, 2022.

Ayoub, J., Du, N. X. J. Yang, Zhou, F. "Predicting Driver Takeover Time in Conditionally Automated Driving," *IEEE Transactions on Intelligent Transportation Systems*, 2022.

Zhou, F., X. J. Yang, X.J., de Winter, J.C.F "Using Eye Tracking Data to Predicting Situation Awareness in Takeover Transition Period in Conditional Automated Driving," *IEEE Transactions on Intelligent Transportation Systems*, 2021.

Du, N., Zhou, F., Pulver, E. M., Tilbury, D. M., Robert, L. P., Pradhan, A. K., & Yang, X. J. "Predicting driver takeover performance in conditionally automated driving," *Accident Analysis & Prevention*, 2020.

Service: Professor Zhou's service record shows his commitment to engineering education. At the department level, he served on the undergraduate Human-Centered Engineering Design (HCED) Program Committee, the graduate Human-Centered Design and Engineering Program Committee, and Lecturer Major Review Committees. As a member of the undergraduate HCED Committee, he helped to design the curriculum of the new Bachelor of Science in Engineering in human centered engineering design program. At the college level, he serves on the Cybersecurity Center Executive Committee and on the Driving Simulator Laboratory Committee. In 2018, he was a member of the College-Wide Core Theme Visioning Committee. At the university level, he served on the faculty senate's research committee. Professor Zhou is also active in professional societies. He serves on the Editorial Review Board of the *International Journal of Virtual and Augmented Reality* and regularly reviews papers for top-tier journals in his field.

External Reviewers:

Reviewer A: "I believe that Dr. Zhou's performance in the area of research and scholarship would compare favorably with cases for human factors and ergonomics faculty that would likely receive positive tenure evaluations at a research intensive institution like [mine]…. Similarly, Dr. Zhou's academic mentoring, course and program development, and instructional performance (as indicated by student evaluation ratings) looks successful and on a very positive and promising trajectory for the future."

Reviewer B: "While the number of papers alone is impressive, that is not necessarily the only indicator of impact on the field. What supports this scholarly impact is the rate at which Dr. Zhou's papers are being cited. Overall Dr. Zhou has more than 4000 citations already, which is far above what I have seen for most cases at the time of tenure. In particular, much of his work within the last 2-3 years on highly automated driving has started to build up citations quickly, with many papers from 2020 and later already having 30-40 citations. To me, this often

indicates that the author is one that others are seeking out as a leader in the field and looking to their work as critical for keeping up with the field."

Reviewer C: "Dr. Zhou's work shows both breadth and depth. His application of various machine learning techniques shows careful consideration of how to extract meaningful, explainable knowledge from qualitative data. His papers clearly lay out the rationale for each step of the process of gathering, cleaning, labeling, and analyzing the data. The breadth of his work is signified by the use of these techniques in domains such as automated driving, product user experience, and medical imaging. The impact of his work can be seen in his citation count, collaborations with colleagues, and scholarly output."

Reviewer D: "Dr. Zhou has developed a good path in his research program and already achieved a lot of scholarly outcomes and impacts. In his automated driving research, he proposed standardized takeover metrics for evaluation and identified most critical predictors for modeling driving behaviors. Both of these projects can provide a foundation in Human Factors research in the automated driving area so that their impact is expected to be fairly large. His application of natural language processing and machine learning techniques to customer needs analysis and medical image processing has also led to many high impact publications, which bodes well for his research quality."

Reviewer E: "I also feel the 2020 *Accident Analysis and Prevention* paper, 'Psychophysiological responses to takeover requests in conditionally automated driving' is very strong. There are many variations on this type of research currently being published, so I am not sure that this specific paper is likely to receive high citation counts, but the scope in terms of the number of variables, number of participants, and analysis of what can be very challenging physiological data is very impressive. I feel that Dr. Zhou is a 'secret weapon' on much of this work, and I look forward to future work that more clearly spells out the transformative contribution of the methods he is bringing to our field."

Reviewer F: "In terms of scholarly impact, Dr. Feng Zhou's [sic] has proven his quality research abilities by publishing 50 journal papers, 37 conference/symposium papers, and 1 book chapter."

Reviewer G: "Dr. Zhou's accomplishments are commensurate with the stage he is at in his career. His research contributions address several important areas within the field of human factors engineering. Accordingly, I have no reservations in recommending his promotion to Associate Professor with Tenure at University of Michigan - Dearborn."

Reviewer H: "His expertise includes the use of human factors methods to improve transportation safety through traffic analysis and the exploration of autonomous driving. More recently, he has begun exploring the natural language processing techniques within various applications of human factors design. Dr. Zhou's research is thorough, well-placed in the context of past literature, theoretically founded, and experimentally sound."

Reviewer I: "In the paper 'Using Eye-Tracking Data to Predict Situation Awareness in Real Time During Takeover Transitions in Conditionally Automated Driving,' recently published on *IEEE Transactions on Intelligent Transportation Systems*, an important work on using real-time

eye-tracking data to predict drivers' situation awareness in vehicle control transitions is presented. Dr. Zhou utilized a tree ensemble machine learning model to predict human's SA. Further efforts also led to understanding on what factors influence situation awareness and their importance in effects. I found this work very impressive and timely. Vehicle control authority transition between a machine driver and a human driver is potentially dangerous because it is a switching process between two very different controllers. Dr. Zhou's work contributes to addressing this challenge by providing an effective way to understand the level of attention of the human driver during the control transitions and thus may facilitate the automated driving system to better prepare for the transitions for driving safety."

Summary of Recommendation: Professor Zhou is a productive scholar in the important and relevant area of human-centered design research. He is an excellent teacher and mentor; and he is a leader who contributes both in external and internal service. It is with the support of the College of Engineering and Computer Science Executive Committee that I recommend Feng Zhou for promotion to associate professor of industrial and manufacturing systems engineering, with tenure, Department of Industrial and Manufacturing Systems Engineering, College of Engineering and Computer Science.

Ghassan Kridli, Dean
College of Engineering and Computer Science

Domenico Grasso, Chancellor
University of Michigan-Dearborn

May 2023