

# TRANSFORMING AGENT-BASED TRAVEL DEMAND MODELING WITH LLM AGENTS

## Speaker

**Dr. Yafeng Yin**

University of Michigan

## Abstract

In this talk, we explore the evolution of travel demand modeling and the transformative role of artificial intelligence in advancing the field. Travel demand modeling is essential for understanding movement patterns, guiding infrastructure development, shaping policy, and supporting strategic growth. By leveraging large language models (LLMs), we introduce a novel LLM-agent-based modeling framework that addresses key limitations of traditional agent-based travel demand models. Our prototype replicates human decision-making and interactions within transportation networks, showcasing the potential of LLM agents to function effectively as autonomous agents. While technical challenges remain, this approach holds significant promise for enhancing the travel demand modeling paradigm.

## Biography

Dr. Yafeng Yin is Donald Cleveland Collegiate Professor of Engineering and Donald Malloure Department Chair of Civil and Environmental Engineering at University of Michigan, Ann Arbor. He works on transportation systems analysis and modeling and has published over 150 refereed papers in leading academic journals. He currently serves as Area Editor of Transportation Science and Associate Editor of Transportation Research Part B: Methodological and was the Editor-in-Chief of Transportation Research Part C: Emerging Technologies between 2014 and 2020. Dr. Yin has received recognition from different institutions, including the Monroe-Brown Foundation Education Excellence Award from College of Engineering at University of Michigan, a Doctoral Mentoring Award from University of Florida, Outstanding Leadership Award by the Chinese Overseas Transportation Association (COTA), Matthew Karlaftis Lifetime Achievement Award from Transportation Research Part C: Emerging Technologies, and Stella Dafermos Best Paper Award, Ryuichi Kitamura Paper Award, and Kikuchi-Karlaftis Best Paper Award from Transportation Research Board of the National Academies of Sciences, Engineering, and Medicine. Dr. Yin received his Ph.D. from the University of Tokyo, Japan in 2002, his master's and bachelor's degrees from Tsinghua University, Beijing, China in 1996 and 1994 respectively.



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**Civil Engineering  
Conference Room  
Room 3574 (Lift 27/28)**

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