

SYNTHESIZING HOUSEHOLD AND PERSON-LEVEL ATTRIBUTES JOINTLY FOR INDIVIDUAL GEOGRAPHIES USING HIDDEN MARKOV MODEL

Friday, November 30, 2018 2:00 - 3:15 PM (US Arizona)
[College Avenue Commons \(CAVC\) Room 333](#) (Parking)



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Transportation
Seminar

About the Talk

In order to apply microsimulation-based models of land use and travel demand, socio-economic and demographic attributes about all individuals in a region are required. This disaggregate level information is not readily available and analysts resort to population synthesis procedures. These procedures combine readily available information in the form of sample data and marginal distributions to generate the required inputs. In this seminar, a simulation-based technique for population synthesis using a Hidden Markov Model (HMM) framework will be presented. An important feature of the proposed approach is the ability to generate more heterogeneous synthetic households and persons. The proposed simulation-based approach was demonstrated using a case study for Connecticut. The current work makes important contributions. First, a hierarchical transition structure was proposed in the HMM-based model to capture the dependencies across household and person-level attributes. Thus, the procedure ensures that both household and person level attributes are controlled simultaneously. Second, the transition matrices are estimated at the geography level incorporating the sample as well as marginal information available. This helps synthesize populations that are more accurate and consistent with available information.

About the Speaker

Dr. Konduri is a Senior Research Scientist at Amazon and holds a courtesy appointment as a Research Scientist at the University of Connecticut. From 2012 to 2018, he served as a faculty member at the University of Connecticut, where he carried out research, teaching, and service in different areas of transportation systems planning and safety analysis. His primary research interest is in the field of microsimulation approaches to modeling transportation systems and analyzing travel behavior. He is an expert in activity-based travel behavior, time use analysis, travel demand modeling and forecasting, transportation planning and policy analysis, integrated models of urban systems, econometric and statistical modeling methodologies, and travel survey methods. Dr. Konduri has published extensively in journals, books, and conference proceedings, and delivered invited presentations at national and international conferences. He is a member of a number of professional transportation organizations and serves as an Associate Editor of *Transportation Letters*.

This seminar is webcast live to a worldwide audience by **ASU Engineering – Global Outreach and Extended Education (GOEE)**. To access the live webcast and archive of previous seminar recordings, please visit: <http://links.asu.edu/ASU-Transportation-Seminar>

Light refreshments will be served. Event is open to the public.



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