Announcing the Final Examination of Bibhas Dey for the degree of Doctor of Philosophy

Time & Location: March 23, 2020 at 10:00 AM in Engineering Building II 211P
Title: ADVANCED ECONOMETRIC MODELS FOR MODELING FLOWS: APPLICATION TO SHARED ECONOMY

Travel and tourism industry is undergoing transformation with the flourishing of online sharing economy marketplaces such as Bike Share services, Uber/Lyft (for taxi services), Eatwith (for community restaurants), and Airbnb (for accommodation). In this study, we selected accommodation service (Airbnb), bikeshare service (Citi bike, NYC) and ride hailing services (UBER/LYFT/Taxi). The current research effort contributes to literature on sharing economy service flow analysis by suggesting econometric approaches for analyzing frequency variables. In the first part of the dissertation, we develop a copula based negative binomial count model framework to count Airbnb listings at census tract level to capture the snapshot of accommodation supply for tourist in NYC. In the second part, considering bike sharing as one of the transportation sharing systems, this current study identifies two choice dimensions for capturing the bike share system demand: (1) station level demand and (2) how bike flows from an origin station are distributed across the network. In the third part, we identify two choice dimensions: a demand component that estimates origin level TNC demand at the taxi zone level and (2) a distribution component that analyzes how these trips from an origin are distributed across the region. A linear mixed model is considered to estimate station or taxi zone level demand while a multiple discrete continuous extreme value (MDCEV) model to analyze flows distribution is employed. In the final part of this dissertation, we develop an innovative joint econometric model system to examine two components of the transformation; (a) the increase in ride hailing demand and (b) the shift from traditional taxi services to TNC services. The first component is analyzed adopting a negative binomial (NB) count model while the second component is analyzed using a multinomial fractional split (MNLFS) model.

Major: Civil Engineering

Educational Career:
Bachelor’s of Civil Engineering, BS, 2014, Bangladesh University of Engineering and Technology
Master’s of Civil Engineering, MS, 2018, University of Central Florida

Committee in Charge:
Naveen Eluru, Chair, Civil Engineering
Hsin-Hsiung Huang, Assistant Professor, Statistics and Data Science
Sabreena Anowar, Assistant Professor, Civil Engineering
Mohamed Abdel-Aty, Professor, Civil Engineering

Approved for distribution by Naveen Eluru, Committee Chair, on November 30, 1999.

The public is welcome to attend.