Ubiquitous uses of social media platforms in smartphones have created an opportunity to gather digital traces of individual activities at a large scale. Traditional travel surveys fall short in collecting most recent travel data for large regions in a cost effective way, especially for the transient population like the tourists. This study presents an innovating methodological framework, using machine learning and econometric approaches, on how to gather and analyze location-based social media (LBSM) data to understand people’s destination choices. First, using Twitter’s search interface, we have collected Twitter posts of nearly 156,000 users for the State of Florida. We have adopted several filtering techniques to create a reliable sample from noisy Twitter data. An ensemble classification technique is proposed to classify tourists and residents from user coordinates. The performance of the proposed classifier has been estimated using manually labelled data and compared against the state-of-the-art classification methods. Second, using different clustering methods, we have analyzed the spatial distributions of destination choices of tourists and residents. The clusters from tourist destinations revealed most popular tourist spots along with some of the emerging tourist attractions in Florida. Third, to predict a tourist’s next destination type, we have estimated a Conditional Random Field (CRF) model with reasonable accuracy. Fourth, to analyze the residents’ destination choice behavior, this study proposes an extensive data merging operations among the collected Twitter data and different geographic database from state level data libraries. We have estimated a Panel Latent Segmentation Multinomial Logit (PLSMNL) model to find the characteristics affecting individual destination choices. The proposed PLSMNL model is found to better explain the effects of variables on destination choices compared to trip-specific Multinomial Logit Models. The findings of this study show the potential of LBSM data in future transportation and planning studies when collecting individual activity data is expensive.

Major: Civil Engineering

Educational Career:
Bachelor’s of Civil Engineering, BS, 2014, Bangladesh University of Engineering and Technology

Committee in Charge:
Samiul Hasan, Chair, Department of Civil, Environmental and Construction Engineering
Mohamed Abdel-Aty, Department of Civil, Environmental and Construction Engineering
Naveen Eluru, Department of Civil, Environmental and Construction Engineering

Approved for distribution by Samiul Hasan, Committee Chair, on March 17, 2018.

The public is welcome to attend.