Title: FIELD EVALUATION OF INSYNC ADAPTIVE TRAFFIC SIGNAL CONTROL SYSTEM IN MULTIPLE ENVIRONMENTS USING MULTIPLE APPROACHES

Since the beginning of signalization of intersections, the management of traffic is one of most critical challenges specifically for the city and urbanized area. All the municipal agencies struggle to manage the perplexities associated with traffic congestion or signal control. The Adaptive Traffic Control System (ATCS), an advanced technological component of the Intelligent Transportation Systems is considered the most dynamic and real-time traffic management technology and has potential to effectively manage rapidly varying traffic flow relative to the current state-of-the-art traffic management practices.

InSync is deployed in multiple states throughout the US and expanding on a large scale. Although there been several ‘Measure of Effectiveness' studies performed previously, the performance of InSync is not unquestionable because the previous studies failed to subject for multiple environments, approaches, and variables. Most studies are accomplished through single approach using simple/naïve before-after method without any control group/parameter. They also lacked ample statistical analysis, historical, maturation and regression artifacts. An attempt to evaluate InSync in varying conditions through multiple approaches is undertaken for the SR-434 and Lake Underhill corridor in Orange County, Florida. A before-after study with an adjacent corridor as control group and volume as control parameter has been performed where data of multiple variables are collected by three distinct procedures. The average/floating-car method is utilized as a rudimentary data and 'BlueMac' and 'InSync' database is considered as secondary data sources. Data collected for three times a day for weekdays and weekends before and after the InSync ATCS deployed. Results show variation in performance and scale. It proved ineffective in some of the cases, especially for the left turns, total intersection queue/delay and when the intersection volumes approach capacity.

Major: Civil Engineering

Educational Career:
Bachelor's of Civil Engineering, BS, 2016, Bangladesh University of Engineering and Technology

Committee in Charge:
Essam Radwan, Chair, Civil, Environmental, and Construction Engineering
Hatem Abou-Senna, Co-Chair, Civil, Environmental, and Construction Engineering
Naveen Eluru, Civil, Environmental, and Construction Engineering

Approved for distribution by Essam Radwan, Committee Chair, on August 1, 2017.

The public is welcome to attend.