



Application of Big Data in Highway Safety Modeling

Seminar summary

Current crash prediction methods, such as those in the Highway Safety Manual (HSM), consist of safety performance functions (SPFs), and crash modification factors (CMFs). While these models have acceptable performance when describing crash occurrence in a yearly basis, they are not appropriate to accurately predict crashes for short-term periods (i.e., months, weeks, days, hours, or peak periods for this research problem). The reason for this inability of conventional safety models of annual crash prediction to quantify the safety effects of variables that fluctuate more often than year-to-year— such as operating speeds, operating speed variance, or seasonal fluctuations— is the lack of sufficient quality data with the adequate granularity for an analysis that would allow characterizing shorter periods. TTI recently completed the Rural Speed Safety pilot project, which was sponsored by the USDOT Safety Data Initiative (SDI). This project mitigated the research gap by using big data from three national level datasets: 1) the National Performance Management Research Dataset (NPMRDS); 2) the Highway Safety Information System (HSIS); and 3) the National Oceanic and Atmospheric Administration (NOAA). This study examined the prevailing operating speeds on a large scale to develop models for rural roadways by incorporating operating speed and weather data. The research product “Interactive Decision Support Tool” (https://ruralspeedsafety.shinyapps.io/rss_sdi/) provides opportunity in generating risk scoring for rural roadways.



Speaker's information

Dr. Subasish Das has been working as an Assistant Research Scientist at TTI. He has more than 11 years of experience related to roadway safety, traffic operation, traffic volume prediction, machine learning, deep learning, data mining, and applications of GIS in transportation engineering. His primary fields of research interest are roadway safety, roadway design, and associated operational issues. He is a Systems Engineer by training with hands on experience on Six Sigma and Lean Engineering. He has published more than 100 technical reports, journal articles, and book chapters. He is the author of the book “Artificial Intelligence in Highway Safety,” which will be published by CRC Press in 2021. The AASHTO Research Advisory Committee (RAC) awarded one of his research reports as 2014 AASHTO Sweet Sixteen High Value Research Project. Dr. Das is an active member of ITE, and ASCE. He is an Eno Fellow. He recently served as vice-president of membership of Young Professionals in Transportation Houston chapter. He is currently member of three TRB Committees: Information and Knowledge Management (AJE45), Artificial Intelligence and Advanced Computing Applications (AED50), and Impairment in Transportation (ACS50).

Time: 4:00-5:00 p.m. US Central Time (Thursday, March 11, 2021)

Zoom Meeting ID: 732 641 0814 Passcode: 575829

Direct Link: <https://tamu.zoom.us/j/7326410814?pwd=cGZKY045dmVkdzVRLy9MYWhocWorQT09>

Faculty Host: Xinyue Ye, LAUP & Urban Data Science Lab

