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Leveraging CAV Data for Scalable Signal Retiming: The SignalIQ Framework

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Monday, 24 November 2025,   9:30 am - 10:30 am (IST)

Join using the meeting link given below

https://tinyurl.com/33rd-TransTechTalk-24-Nov-2025

ABOUT THE TALK :

Traditional signal retiming is often confined to high-priority corridors due to the high cost and upkeep of detection infrastructure. Leveraging the growing availability of Connected and Automated Vehicle (CAV) data, a new data-driven framework enables network-wide signal optimization without additional field deployment. This approach, powered by the SignalIQ cloud-based management platform, uses real-time CAV trajectory and telemetry data for automated performance diagnostics and adaptive timing plan generation. This presentation introduces a data-driven framework that utilizes CAV trajectory and telemetry data to support large-scale, automated signal retiming across urban networks. Case studies highlight how CAV-derived metrics—such as approach delay, queue length, and arrival-on-green ratios—can enhance travel time reliability, energy efficiency, and safety performance across entire urban networks, offering a scalable and cost-effective solution for modern signal operations.

KSCSTE - National Transportation Planning and Research Centre (NATPAC)

National Transportation Planning and Research Centre (NATPAC) is a premier research institution under the Kerala State Council for Science, Technology and Environment (KSCSTE), driving transportation research, road safety initiatives, and sustainable development efforts aimed at addressing Kerala's traffic and mobility challenges. The Centre's expertise encompasses urban planning, highway design, intelligent transportation systems, inland water transport, traffic congestion management, and road safety enhancement, complemented by regular training programs for stakeholders, including engineers, enforcement agencies, and other working professionals. NATPAC is organizing this talk in collaboration with ATPIO.

Association of Transportation Professionals of Indian Origin (ATPIO)

Founded in 2004, ATPIO serves as a global forum for transportation professionals of Indian origin to address industry challenges, exchange ideas, and mentor young professionals. The association actively facilitates knowledge and technology exchange between India and the international community, while advancing transportation systems through workshops, seminars, and conferences that promote networking, collaboration and capacity-building.

ABOUT THE SPEAKER :

Dr. Anuj Sharma is a Professor in the Department of Civil, Construction, and Environmental Engineering at Iowa State University, where he also serves as the Associate Director of the Translational AI Center (TrAC) and Co-Director of the REACTOR Laboratory at the Institute for Transportation. His research focuses on applying artificial intelligence, connected vehicle data, and large-scale analytics to improve transportation system safety, mobility, and operational efficiency. Dr. Sharma has led/co-led more than 60 funded projects totalling over $20 million from federal, state, and industry sponsors, including NSF, FHWA, and multiple state DOTs. His current work includes developing the SignalIQ platform, an AI-driven tool for automated traffic signal performance monitoring and retiming using CAV data.