2024 Award Winner

DANIEL B. FAMBRO STUDENT PAPER AWARD

Zachary Jerome

"Determining Minimum Change Intervals from Vehicle Trajectory Data"

ITE—A Community of Transportation Professionals is pleased to announce that **Zachary Jerome** has been selected to receive the 2024 Daniel B. Fambro Student Paper Award for the paper titled **"Determining Minimum Change Intervals from Vehicle Trajectory Data."**

This award recognizes a significant paper prepared by a student member of ITE and honors the work of Daniel B. Fambro, who was a professor at Texas A&M University and an associate research engineer at the Texas A&M Transportation Institute and passed away in 1999. In naming the award in Dan's honor, ITE recognizes his exemplary service to ITE, and his dedication to his students and the profession. The award provides ITE a means to encourage student members to investigate transportation subjects and report on independent and original research. The Dan Fambro Award recognizes outstanding accomplishment in this area, and ITE is pleased to shine a spotlight on young and talented transportation researchers.

Zachary's award-winning paper addresses the critical issue of optimizing traffic signal change intervals to enhance road safety. Traditional methods often fail to account for real-world driver behaviors, leading to dangerous "dilemma zones" where drivers can neither safely stop nor proceed through an intersection during the yellow light phase. Jerome's innovative approach utilizes comprehensive vehicle trajectory data, eliminating the need for generalized kinematic models and providing precise, data-driven change intervals. Tested in Birmingham, MI, his method identified that many existing intervals were insufficient, particularly for left-turn movements, and proposed more accurate, dynamically calculated intervals.

The study analyzed over 578,000 vehicle trajectories across 34 intersections, revealing that 65 out of 192 movements had inadequate change intervals. Jerome's method demonstrated that utilizing vehicle trajectory data allows for accurate measurement of critical distances and travel times, leading to tailored change intervals that better match real-world conditions. By addressing the limitations of traditional kinematic models and providing a scalable, cloud-based solution, his research offers a significant improvement in traffic signal timing practices. This approach not only enhances safety by reducing red-light running and abrupt stops but also optimizes traffic flow, contributing to more efficient and safer intersections.

The author is a Ph.D. Candidate in the Next Generation Transportation Systems program in the Department of

Civil and Environmental Engineering at the University of Michigan and a member of the Michigan Traffic Lab (MTL), advised by Dr. Henry Liu. He has a bachelor's degree in civil engineering from the University of Tennessee, Knoxville, and a Graduate Research Fellowship from the National Science Foundation. Zachary's research focuses on the systematic management of signalized intersections using increasingly available vehicle trajectory data from connected vehicles.

When asked about his professional aspirations, Zachary replied, "I am passionate about translating research into applications for real-world impact. My vision is to provide solutions for intersection management across the world that are scalable, sustainable, and efficient."

You can read about Zachary's research in an upcoming issue of *ITE Journal*. Visit here for more information on ITE's Awards Program and to see the other 2024 award recipients.