Research Title:

Optimizing Route Controls for Public and Private Vehicles

Primary Investigator:

Name: **Prof. Nathan Gartner**

Faculty: **Department of Civil Engineering**

Academic Institute: **Ariel University**

In this research we develop and test advanced traffic signal control strategies that optimize system performance while providing priority to transit vehicles. We investigate the following cases: (a) transit priority for LRT and BRT vehicles on dedicated right-of-way lanes; (b) transit signal priority (TSP) on arterial routes with mixed bus and car traffic; (c) connected and automated (CAV) vehicles in mixed traffic.

Accomplishments in this reporting period:

1. Presentation of optimization models to provide progression schemes for private and public vehicles were presented at two venues:
   - International Conference on Modern Trends in Civil Engineering and Materials Science, held at Ariel University, September 2025.
   - Civil Engineering Seminar presented at Ariel University, November 2025.
2. A research paper on “Euclidean Approach to Green-Wave Theory” written in collaboration with U.S. scientists was published in *Journal of Advanced Transportation*, June 2026.
3. A review paper on “Simultaneous Optimization of Arterial Progression Schemes for Private and Public Vehicles,” was submitted to the journal *Sustainability* and is under review.
4. Five signalized intersections on a major arterial street in Tel Aviv (Levi Eshkol Blvd.) were coded in the AIMSUN model. We are testing (by microscopic simulation) advanced control strategies employing the CPLEX suite of optimization models.