Smart Mobility: Raleigh NC

Agenda

City Background

Raleigh in Motion

Traffic and Safety Optimization

Future Opportunities

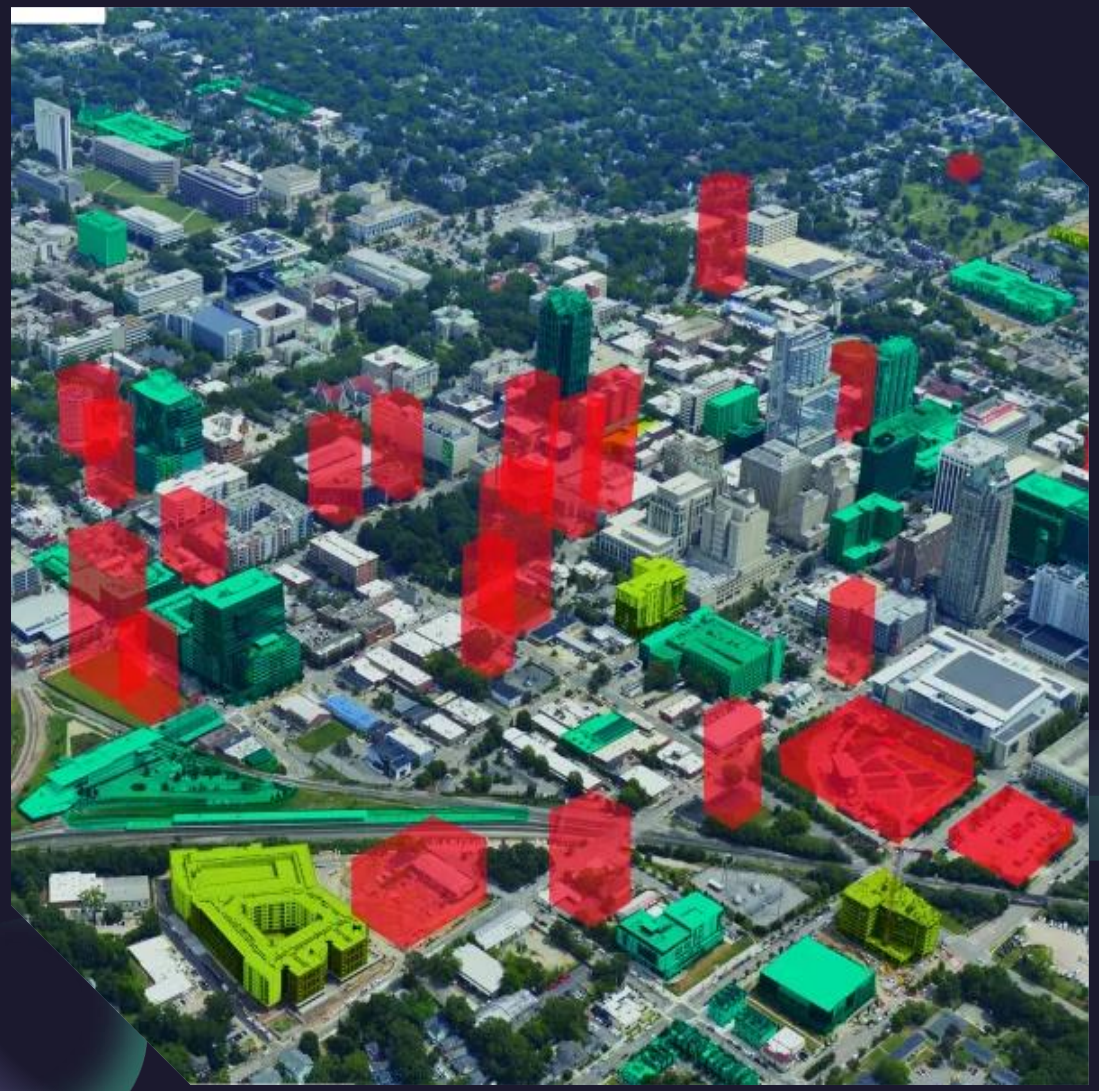
- Transit development
- Emergency Management
- Environmental Management

Raleigh: A Brief Background

Population: ≈500k within corporate boundary; 1.6 million in the metro; around 62 new residents daily [1]

Travel: 60% single occupancy vehicular travel; ≈25% telecommute; the remaining accounting for all other forms [2]

Avg Commute: 23 minutes within city, 24.5 minutes in the metro [3]

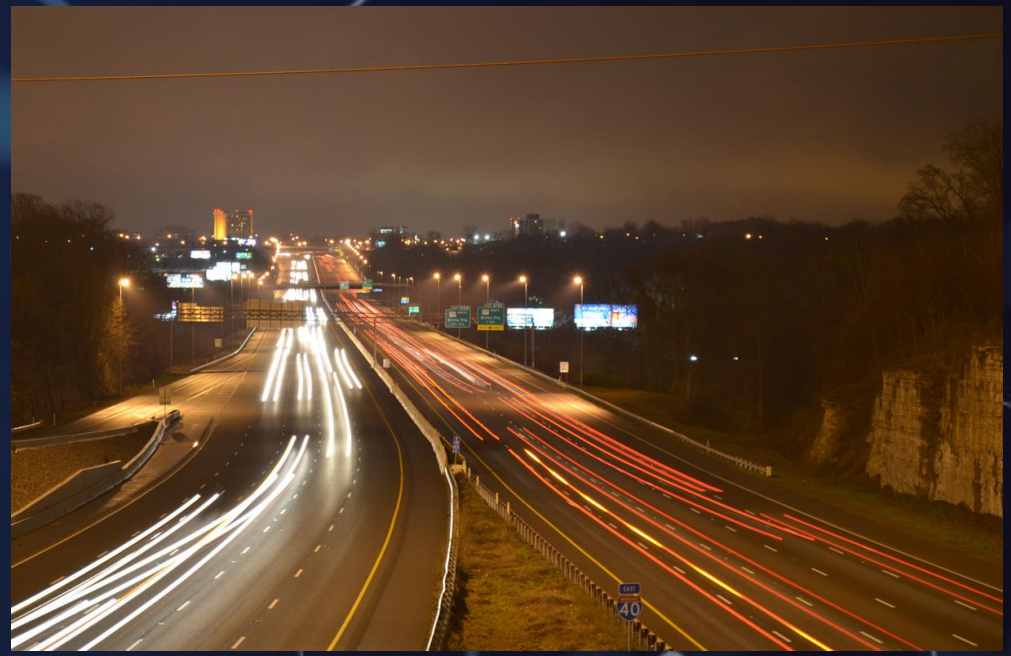


Raleigh in Motion

- Project started in 2024 in collaboration with NVIDIA and ESRI[5]
- Utilizes existing traffic cameras and collected data with NVIDIA Deep Stream and Video Search and Summarization (VSS) – both part of the NVIDIA Metropolis ecosystem; data fed into ESRI supported digital twin for ease of understanding [6]
- Study focused on intersections where cameras allowed for greatest degree of visibility in traffic counts – intersections on Glenwood Ave, and areas downtown [7]
- Outcomes meant for adjusting traffic light timing, and future operationalization intends to focus on all-way stops as a tactic to improve safety in as-yet unidentified intersections [8]

Traffic and Safety Optimization

- Per Anne Conlin, City of Raleigh, the pilot is focused on vehicular traffic with plans to expand into other modes as program evolution and operationalization continues [9]
- Focus informs traffic signal management – adjusting timing to improve flow efficiency – potentially reducing need for major infrastructure projects [10]
- Identifies stalled vehicles more readily and can reduce response time and ensure safety of motorists and others in impacted area(s) [11]
- Data gathered hopes to inform future updates to city plans – e.g. Comprehensive Pedestrian Plan, Downtown Raleigh Experience Plan, etc.; as well as to aid in development of tangible improvements to pedestrian and cycling infrastructure [12]



Future Opportunities – Transit Development

- City engaged in extensive development of Bus Rapid Transit (BRT) [13]
- Raleigh North route is the closest to starting construction [14]
- Potential for refined development of BRT with use of AI – traffic counts would indicate the conflict points and guide in decision making for design development [15]

Future Opportunities – Emergency Management

- Accident preemption – AI and cameras can detect traffic anomalies and potentially dispatch emergency teams before a 911 call is ever made [16]
- Outside of preemption - much faster ability to locate and respond to stalled vehicles, and other more serious incidents – ability to coordinate resources as appropriate to reduce response times, including cross-departmental coordination [17]
- Early warning flood detection system – allows emergency responders to cordon off impacted areas potentially before commuters ever reach said areas [18]

Future Opportunities – Environmental Management

- Balancing of AI use with avoided emissions and other environmental impacts. [19]
- City sustainability office is currently weighing the tradeoffs of AI use in data granularity – at what frequency of traffic cam observations would there be adequate coverage to meet the goals of the operation? [20]
- Can act as an early detection system for flooding from severe weather events; e.g. – hurricane season other seasonal events [21]
- Waste management – AI is able to alert city staff to when bins need emptying in parks for example [22]

Thank you

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