Automated Traffic Signal Performance Measures

City of Gainesville Initiatives
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Coral Springs, FL
What is ATSPM?

Performance metrics for intersection operations

- Data driven performance measurements
- Collection of high resolution data
- Developed from the partnership of Indiana DOT and Purdue University
  - Utah DOT developed open-source platform
City of Gainesville
Traffic Operations

- Maintains 236 traffic signals throughout Alachua County
- Connected by 105 miles of fiber optic cable
  - Over 2,000 network nodes
Iteris – VantageLive!

- Powerful data collection for both engineers and planners
- Traffic data collection on demand

**Advantages**
- Leverages existing field hardware
- Interoperable with various controller vendors
- Cloud-based data storage
- Report generation
- Easy data access

**Disadvantages**
- Time intensive setup
- Minor hardware changes
Iteris – VantageLive!

Graphs showing data for VEHICLES, BICYCLES, and PEDESTRIANS with volume per hour and percentage distribution for different directions.
Traffop - ATSPM

Interactive data analytics

• Data collected from existing infrastructure
  ➢ Minimal setup required

• Requires data logging features on controller hardware
  ➢ Advanced transportation controller (ATC)

• Cloud-based data storage

City of Gainesville Pilot Project

• Deployed at 16 intersections
  ➢ Expand to 45 additional intersections this year
Traffop – Split Monitoring
Traffop – Split Monitoring

Phase 1 for 5033: Newberry Rd - 66th St

Phase Duration (seconds)

Date


Force Off
Gap Out
Max Out
Traffop – Phase Termination Diagram

Phase Terminations

Force Off
226 of 489
46.2%
Traffop – Phase Termination Diagram

Phase Terminations

Phase 2
81 of 489
16.6%
Traffop – Phase Termination Diagram

Phase Terminations

Gap Out
154 of 489
31.5%
Traffop – Phase Termination Diagram

Phase Terminations

Phase 8
56 of 489
11.5%
Traffop – Pedestrian Delay

Pedestrian Delay for Phase 4 - 5033: Newberry Rd - 66th St
Traffop – Turning Movement Counts

Turning Movement Counts for 5034: Newberry Rd - 62nd St
Northbound Left Vehicle Lanes
Total Volume = 4805; Peak Hour = 2:45 PM - 3:45 PM; Peak Hour Volume = 364 VPH; PHF = 0.86; f,L = 0.93

Show Plans

Plan 2

Plan 2

Plan 4

Plan 1

Plan 3

Plan 4

Plan 5

Volume (VPH)

Traffop – Purdue Coordination

Purdue Coordination Diagram
5034: Newberry Rd - 62nd St - Westbound Thru - Protected Phase 2
Percent Arrivals on Green: 84%
Percent Green: 72% / Total AoG: 3016 / Total AoR: 480 / Platoon: 1.17

Plan 11
Green: 63.99% / AoG: 74.96%
AoR: 129 / Platoon: 1.19

Plan 4
Green: 73.44% / AoG: 85.75%
AoR: 351 / Platoon: 1.17
Traffop – Arrivals on Red

Arrivals on Red
5033 Newberry Rd - 66th St - Westbound Thru - Protected Phase 2
Volume: 6772 / AoR: 1663 / AoR Percent: 24.51%

Plan 1
Vol: 5677 / AoR: 1520
AoR: 26.73%

Plan 2
Vol: 1141 / AoR: 270
AoR: 23.66%

Plan 4
Vol: 1290 / AoR: 412
AoR: 31.94%

Show Plans
Percentage AoR
Total Vehicles
Total AoR

Volume (Vehicles Per Hour)
Future Developments

Partnering with University of Florida – Department of Computer Science

• Utilizing machine learning to develop signal behaviors
  ➢ Traffop: measures individual signal performance
  ➢ TrafficCast BlueTOAD: measures corridor travel times/performance
  ➢ Iteris VantageLive!: traffic data collection
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Partner organizations

FDOT

UF UNIVERSITY OF FLORIDA

iteris

GRIDSMART

Trafficware

TRAFFICAST

traffop