Award #1545116 Traffic Operating System for Smart Cities

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Challenge:

- Maximize traffic network mobility using a holistic cross-layer (network, link and vehicle) design.
- Utilizing autonomous and connected vehicles (ACV).

Solution:

- Maximize road capacity with vehicle platooning.
- Game-theoretic network throughput analysis with mixed vehicle autonomy and selfish vehicle routing.

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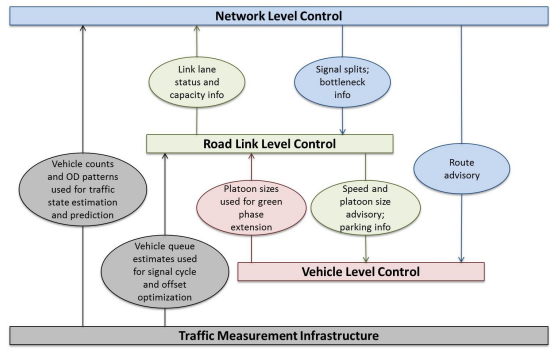
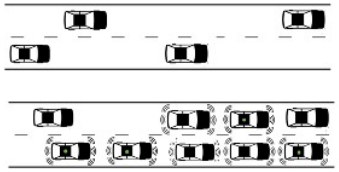
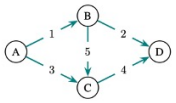
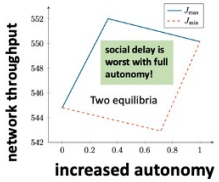
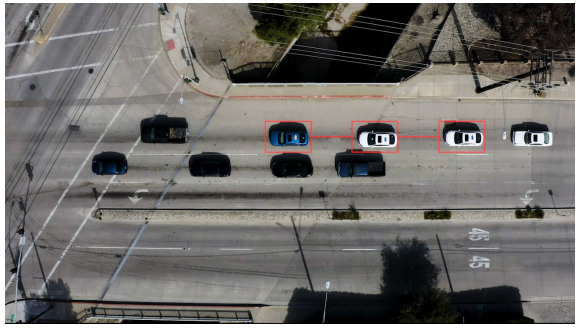






Single O/D pair – A/D





Scientific Impact:

- TTP demo of an ACV platoon improving arterial road capacity.
- Developed network and link - level road capacity analysis and control to guarantee overall societal mobility improvement.

Broader Impact:

- Demonstrated how to achieve safety, capacity and energy efficiency enhancements.
- Accounting for the gradual autonomy deployment.
- Without network capacity management and infrastructure enhancements, increased ACV deployment may deteriorate overall network mobility.