Safety-Critical Wireless Mobile Systems



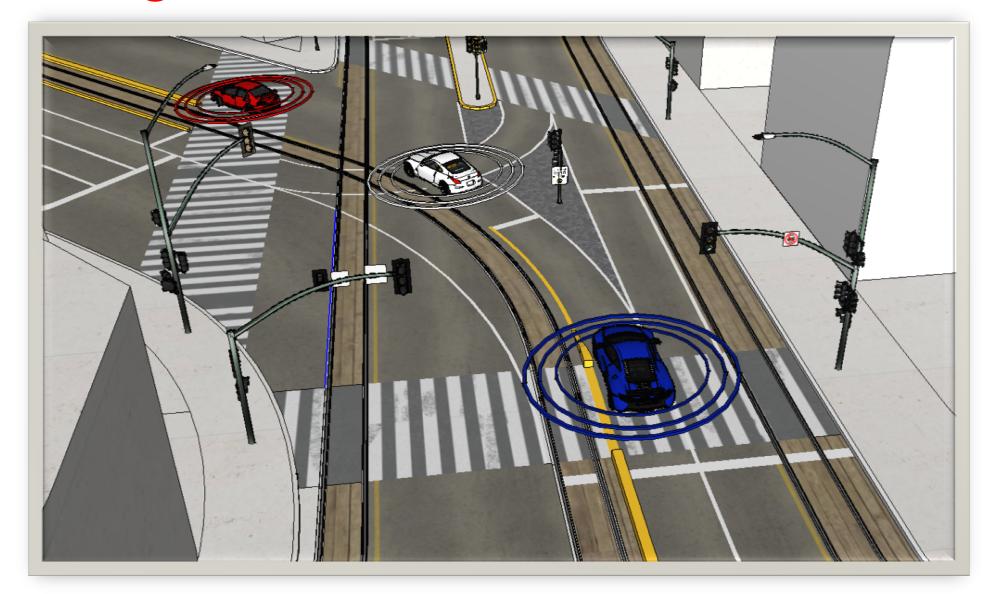
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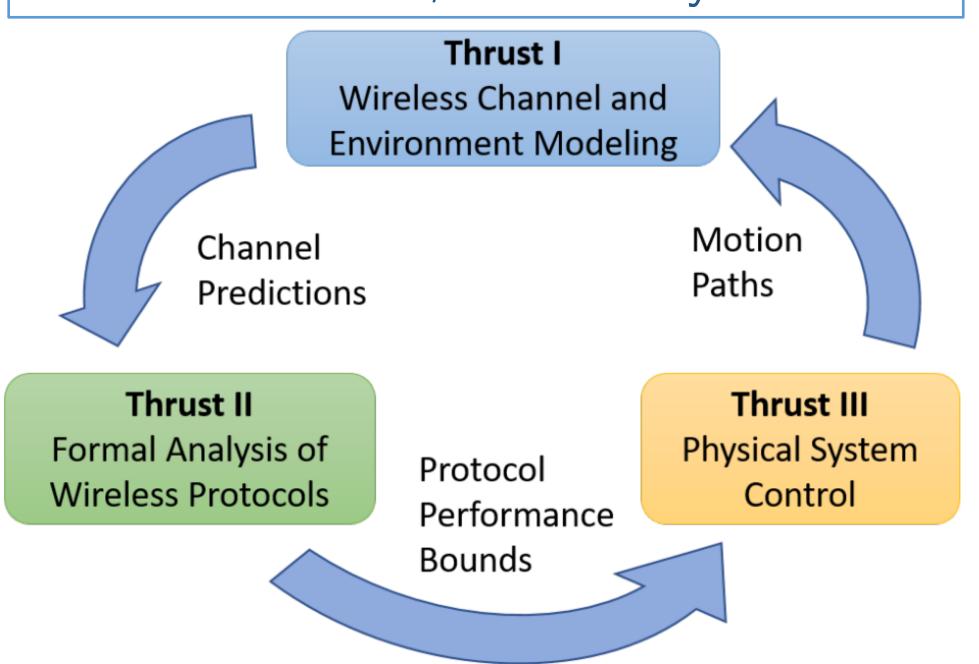
PROBLEM STATEMENT

Wireless coordination between mobile systems could enable them to reach high performance states.

There is currently no methodology for providing provable safety guarantees for such states.



The main challenge is to capture the interdependence between mobility, wireless, and safety.



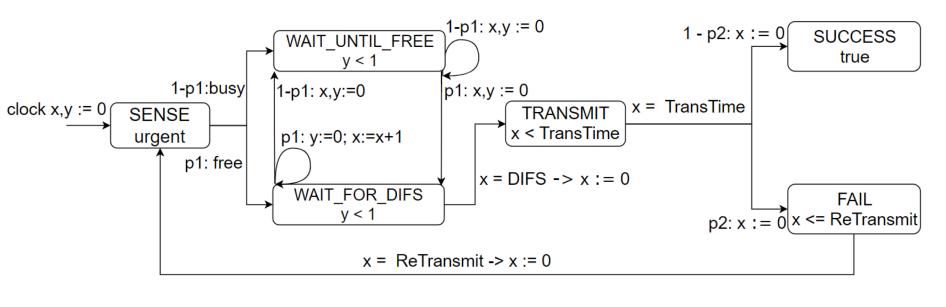
POTENTIAL FOR IMPACT

Vehicle Platooning, **Unmanned Aerial Systems**

- Significant fuel savings.
- Increased road capacity.
- Mobility, delivery

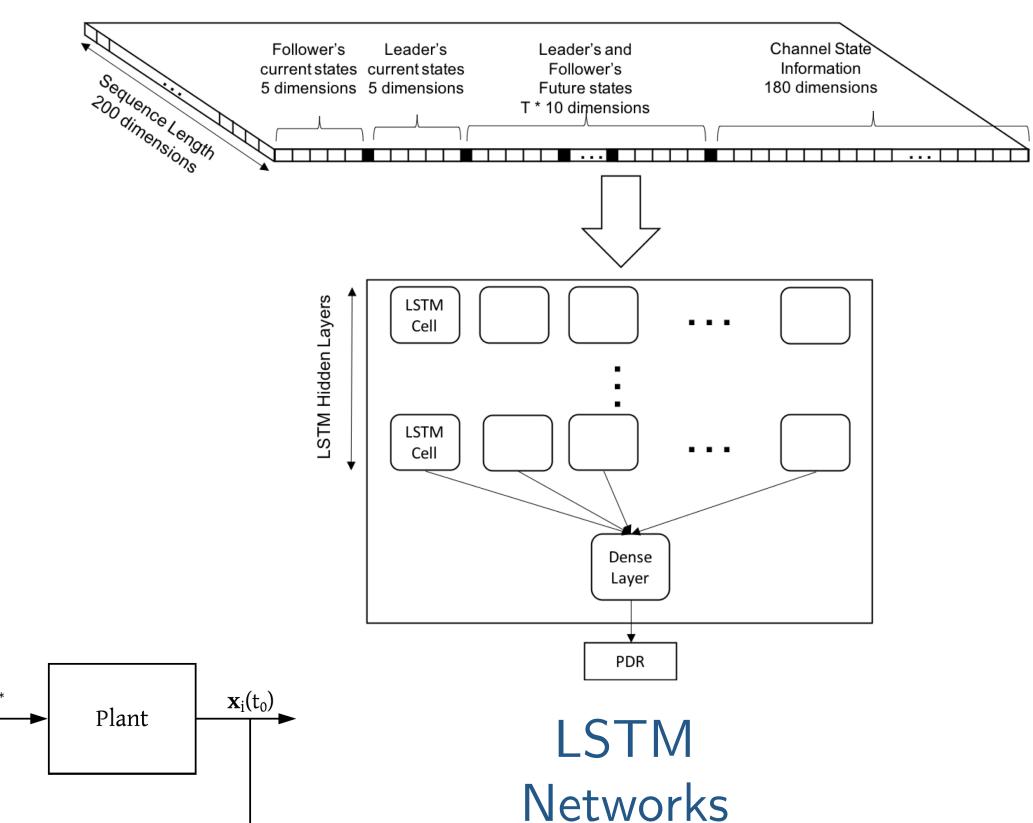
APPROACH

Formal Analysis of Wireless Protocols

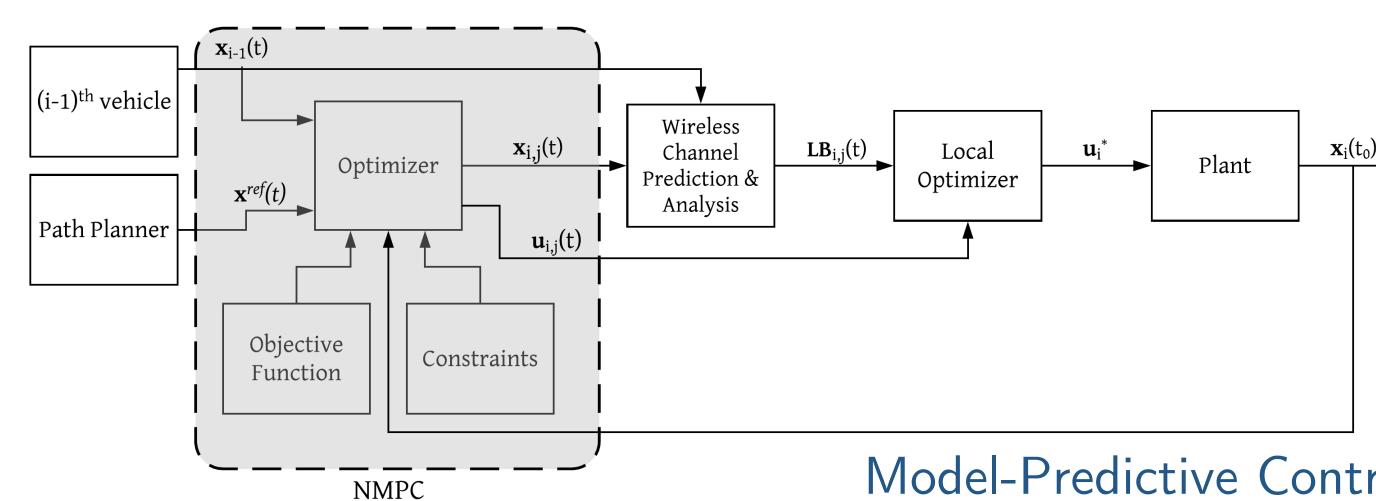


PRISM

Wireless Channel and Environment Modeling



Physical Systems Control



Model-Predictive Control

RESULTS

- Designed and conducted studies of wireless performance under dynamic conditions
- Trained and tested LSTM learner to predict wireless performance
- Proposed model-predictive control algorithms that guarantee safety and improve physical performance by finding "low latency trajectories"

