



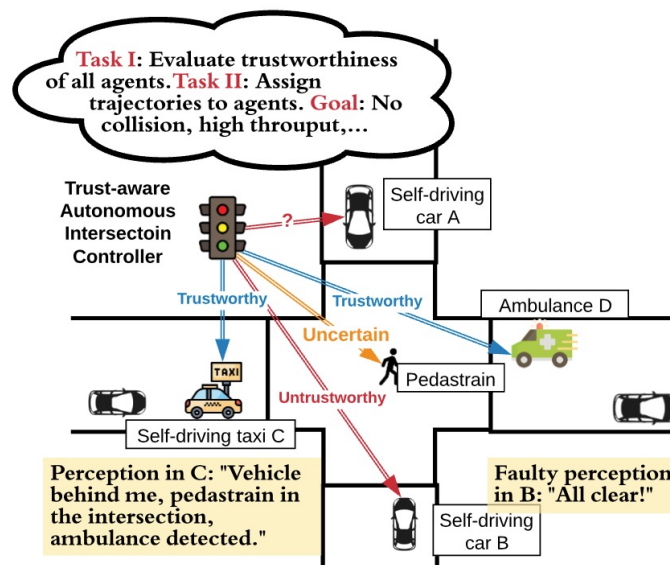
CPS: Small: Uncertainty-aware Framework for Specifying, Designing and Verifying Cyber-Physical Systems

Challenge:

- How to quantify perception uncertainty in complex cyber-physical systems (CPS)?
- How to quantify trust in AI-enabled CPS operating in highly uncertain environments?

Solutions:

- Modeling of interdependent CPSs
- Mathematics of time-varying uncertainty
- Quantification of robustness against such uncertainty
- Design of trust-aware control strategies for autonomous CPS



Scientific Impact:

- Stochastic temporal logic formalism: learn specifications & quantify robustness satisfaction in real-time
- Trust-based control algorithms for multi-agent CPS (uncertainty through trust)

Broader Impact:

- Trust-aware control
- Provides new theoretical and algorithmic tools for researchers in autonomous CPS
- Mentored 2 PhD students (1 underrepresented minority)
- 2X and new theoretical approaches in CPS and science of autonomy

