



**Improving Safety by Synthesizing Interacting Model-based and Model-free Learning Approaches**  
PI: Andreas A. Malikopoulos (Cornell University) Co-PI: Kyriakos G. Vamvoudakis (Georgia Institute of Technology)  
IIS-2415478

**Challenge:**

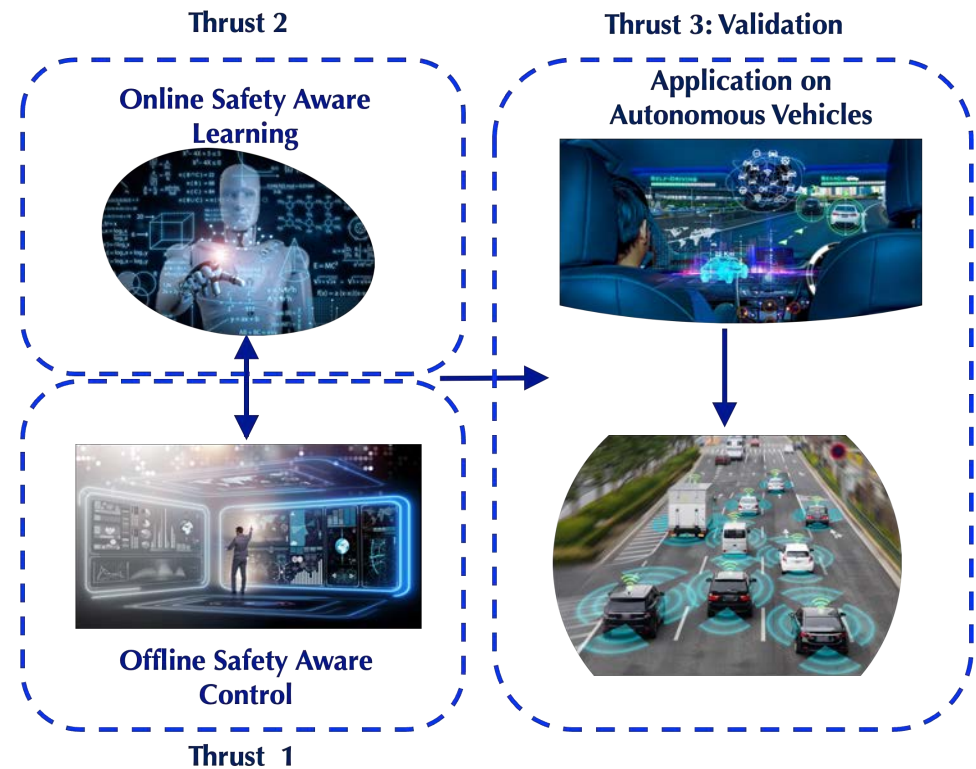
Establish data-driven safety approaches for (1) **model-free**, (2) **model-based** and (3) **interacting model-free** and model-based learning-enabled systems.

**Solutions:**

- Develop an **offline** safety-aware **monitoring strategy** that will monitor the system over anomalous and unsafe behavior.
- Develop an **online safety-aware** learning framework with predefined time convergence guarantees.

**Impact:**

- The proposed research could effectively facilitate **robust learning-enabled systems** even within **complex environments** while monitoring them for anomalous and unsafe behavior.





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## Evaluation and Experimentation Plan

**Evaluation and Experiments in a Scaled Smart City with Robotic Cars**



**Virtual Reality (VR) Driver Simulation Testbed**

