



Designing Resilient Strategies and Information Structure for Team Games in Cyber-Physical Networks

Award #1566127, Awarded April 13, 2016, Started July 1, 2016

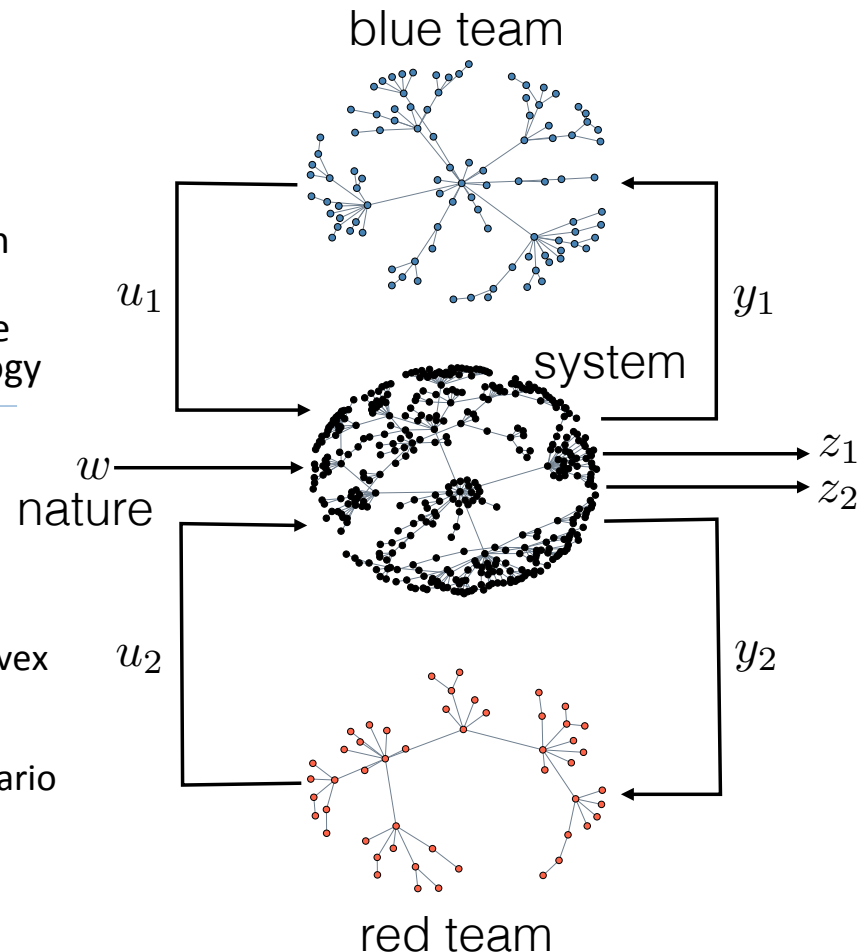
PI: Tyler Summers, University of Texas at Dallas

Challenge:

- Joint design of feedback strategies and information structures in CPS with decentralized information featuring *both* cooperation and antagonism
- Model-based, quantitative “Red Teaming” methodology

Solution:

- Stochastic two-team game theoretic framework for strategy design
- Greedy algorithms and convex relaxations for information structure design
- Red team—blue team scenario development for power networks and distributed robotic networks



Scientific Impact:

- Fundamental insight into strategies and information structures for cooperative and resilient CPS
- Team game perspective, with rich interplay of dynamics, information, uncertainty, and malicious attack

Broader Impact:

- Foundational understanding will contribute to resiliency of critical CPS infrastructure
- Interactive outreach activities at UT Dallas Explore Engineering Week, Perot Museum of Nature and Science, Texas Instruments with multi-robot experimental testbed