



Community Sense & Respond

Krause, Chandy, Clayton, Heaton

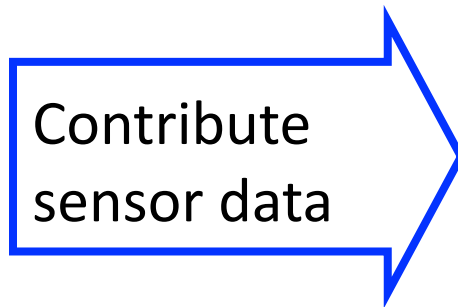
@caltech

..where theory and practice collide

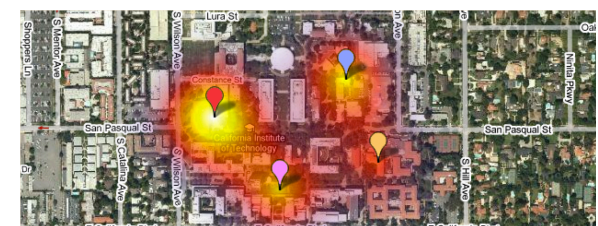
How can we build community-held CPS that allow sensing and responding to crises?

Sense:
Cascading failures,
traffic jams,
earthquakes

Respond:
Regulate grid, traffic,
stop trains, elevators



Community
Seismic Network



USB accel., Android phones
Google AppEngine

CPS Challenges

Uncertainty
Continuous/discrete
Safety-critical
Scale

Our Approach

Robust Bayesian reasoning
Distributed anomaly detection
No-regret online learning
Cloud computing