

# Cognitive Video Sensor Networks

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The requirement for cognitive organization of video data is ubiquitous, and as our culture and society grow in complexity, the infrastructure that supports them grows and is increasingly subject to more, increasingly unpredictable and varied pathologies, many of which are the result of unexpected interactions between intelligent, self-interested processes. At its root, a cognitive organization is a structural commitment to processes and representations that permit adaptive control in an operating environment that cannot be modeled completely *a priori*. A cognitive agent optimizes its behavior to achieve an objective efficiently by finding models that resolve hidden state information and that help it to predict the future under a variety of real-world situations. These processes involve monitoring, exploration, logic, and communication with other agents.

**We plan to create new theories and realizations for cognitive organization in video sensor network systems that consist of interacting domain specific agents, each with rich internal state and complex actions in order to facilitate the construction of effectively organized cognitive infrastructure.**

This requires key technical advances in three areas: (1) cognitive architecture, (2) robust distributed embedded video networks, and (3) large-scale data analysis and storage capabilities. A cognitive system must *understand* the context of operation.