

UNIVERSITÉ CÔTE D'AZUR

ACADÉMIE D'EXCELLENCE

RÉSEAUX, INFORMATION,
SOCIÉTÉ NUMÉRIQUE



ACADY

Apprentissage collaboratif et adaptatif sur graphes dynamiques
pour les grands réseaux

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Information processing over networks

Smart grids



Social networks

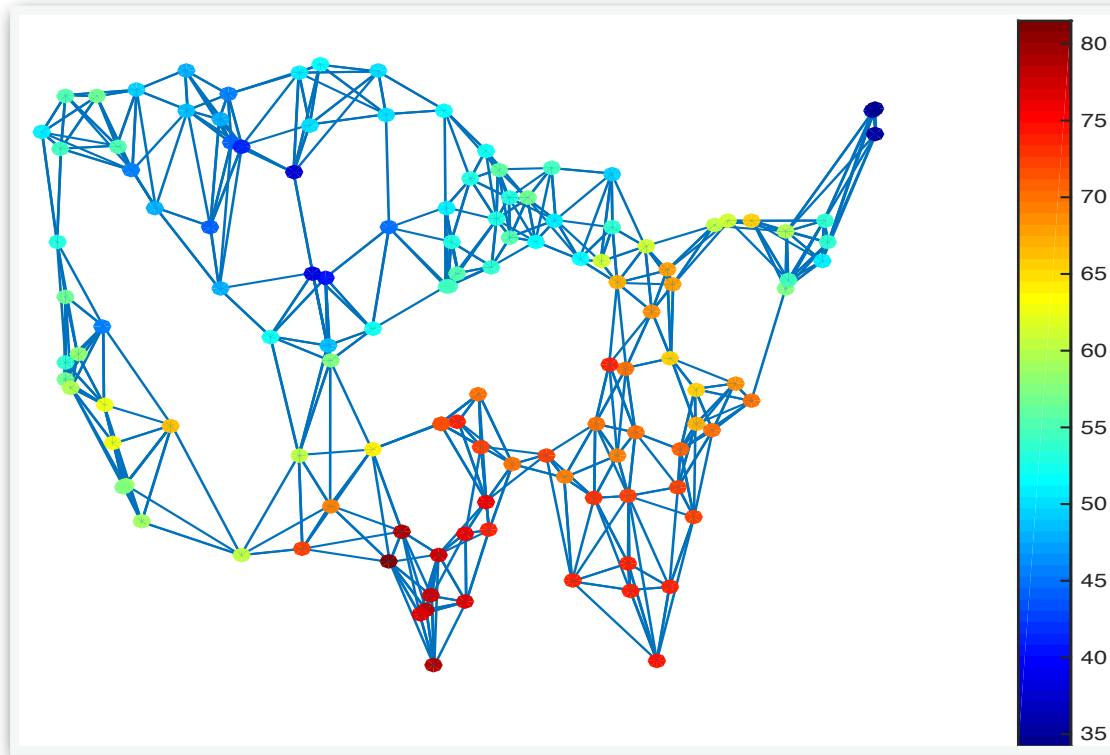


Sensor arrays



- **Desiderata:** process, analyze and learn from network data
- **Network as graph G :** encode pairwise relationships
- Interest here not in G , but in data associated with nodes
 - Object of study is a graph signal

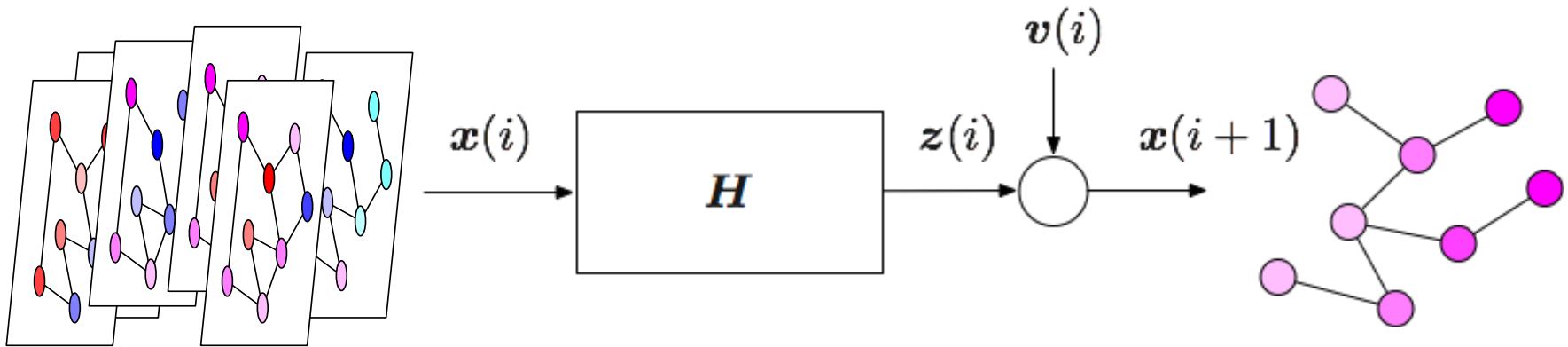
Information processing over networks



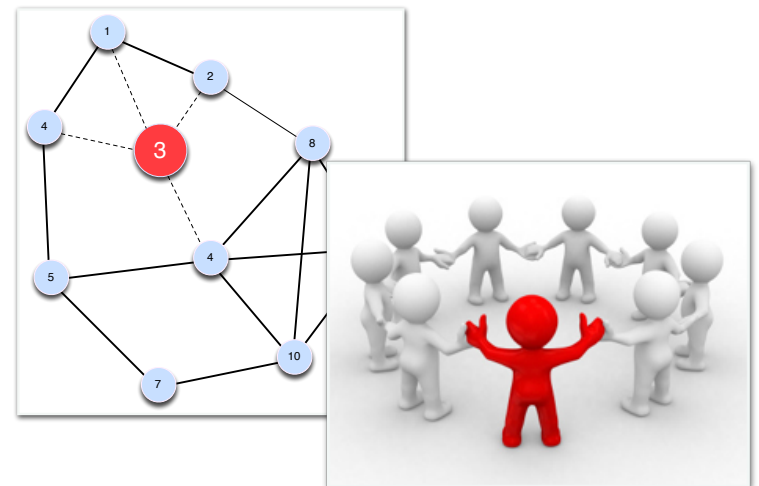
Process data that possess an intrinsic graph structure.

Adaptation and learning over networks

Prediction:



Decision making (e.g. intruder detection):



Challenges

- **Adaptive agents:**

Ability to learn **continuously** and to adapt to drifts in the data.

Quick-rough answer vs. slow accurate answer

- **Collaborative agents**

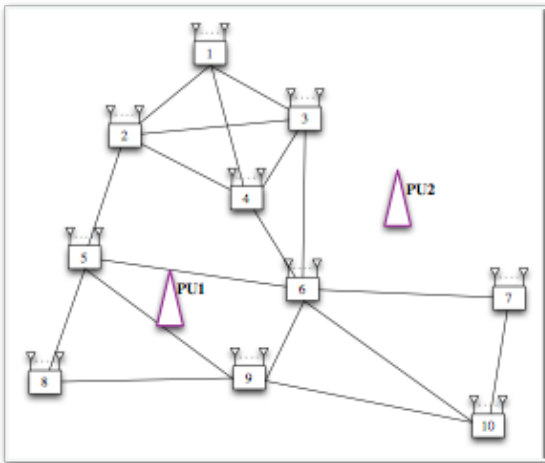
Ability to interact **locally** with other agents

- **Distributed learning**

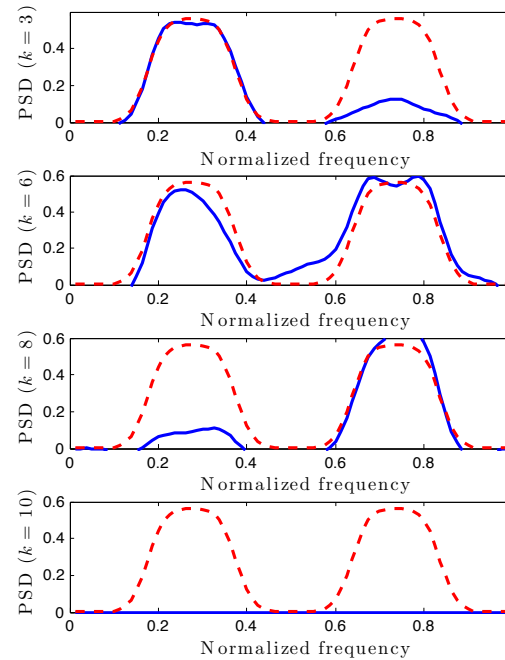


Cognitive radio

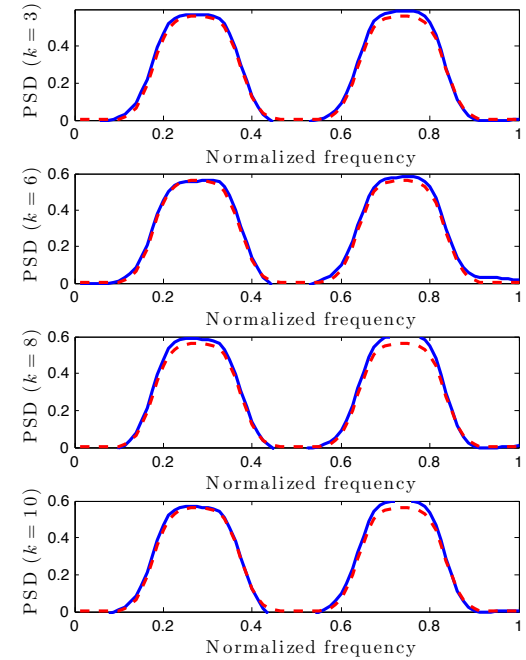
network



non-cooperative



cooperative



Smart city

Detection of contamination in water distribution network

