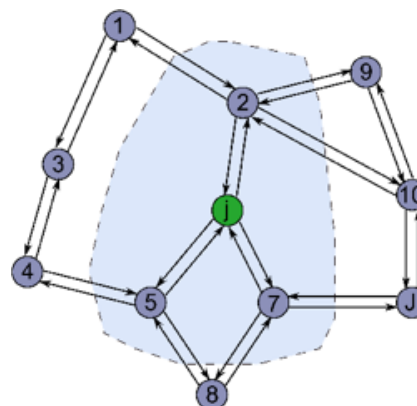


# Robust Classification and Clustering in Wireless Sensor Networks



TECHNISCHE  
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Pro-/Projektseminar or Bachelor Thesis



Distributed adaptive signal processing and communication networking are rapidly advancing research areas which enable new and powerful signal processing tasks, e.g., distributed speech enhancement in adverse environments. Today's wireless sensor networks provide the possibility to monitor physical environments via small low-cost wireless devices. Given the large amount of sensed data, efficient and robust clustering and classification becomes a critical task in many applications. Typically, the devices must operate under stringent power and communication constraints and the transmission of observations to a fusion center is, in many cases, unfeasible or undesired. Furthermore, data recorded by wireless sensor networks may be affected by noise and errors. A challenging research question in such cases is the design of data clustering and classification rules when each sensor collects a set of unlabeled observations. By communicating with each other, the network of sensors achieves improved clustering and classification results compared to single node processing, while being insensitive to a certain amount of outliers or erroneous data.

Students participating in this project will learn about clustering and classification techniques with special emphasis on distributed setups as well as robust statistics. They should investigate how to obtain a reliable clustering or classification of data based on a unique labeling of the sources, even in the presence of faulty or distorted data. Depending on the student's knowledge and interest, an individual topic for a student project can be discussed.

**If you are interested in the project please contact:**

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Image sources: iStock.com/mstay (left).