

## Adventures in Unlabeled IoT Signals Data with Insurance Risk Management Applications

Currently, many companies are leveraging the advancement in IoT technologies by incorporating Wireless Sensor Network (WSN)-based solutions as part of their monitoring and risk analysis systems. HSB, whose parent company is the Munich Re Group, is interested in analyzing vast amounts of data and information from IoT sensors of various types placed in thousands of institutional buildings across the US in order to minimize the risk of adverse events (insurance claims) for its customers. This talk will focus on one application, pipe freeze prevention, and describe how a multidisciplinary team of statisticians, computer scientists and engineers from the University of Connecticut and HSB collaborated to develop unsupervised methods to identify aberrant data from faulty sensors/installations, cluster subsequences, detect anomalies associated with imminent pipe freeze and finally to detect customer interventions post-freeze alert.