# Automatic Thresholding for Data Gap Detection for a Set of Sensors in Instrumented Buildings

**Authors :** Houda Najeh, Stéphane Ploix, Mahendra Pratap Singh, Karim Chabir, Mohamed Naceur Abdelkrim

**Abstract :** Building systems are highly vulnerable to different kinds of faults and failures. In fact, various faults, failures and human behaviors could affect the building performance. This paper tackles the detection of unreliable sensors in buildings. Different literature surveys on diagnosis techniques for sensor grids in buildings have been published but all of them treat only bias and outliers. Occurences of data gaps have also not been given an adequate span of attention in the academia. The proposed methodology comprises the automatic thresholding for data gap detection for a set of heterogeneous sensors in instrumented buildings. Sensor measurements are considered to be regular time series. However, in reality, sensor values are not uniformly sampled. So, the issue to solve is from which delay each sensor become faulty? The use of time series is required for detection of abnormalities on the delays. The efficiency of the method is evaluated on measurements obtained from a real power plant: an office at Grenoble Institute of technology equipped by 30 sensors.

**Keywords :** building system, time series, diagnosis, outliers, delay, data gap

**Conference Title :** ICBS 2019 : International Conference on Building Simulation

**Conference Location :** Rome, Italy

**Conference Dates :** January 17-18, 2019