Master’s Thesis

Title: Effects of pressure data quality on the performance of leak detection and leak localization algorithms for water distribution systems

Time period: Jan 2019 - May 2019

Language: English, German upon request

Motivation and aims of the study:

For both model-based and data-based approaches to leak detection and leak localization in water distribution systems (WDS), sensor data is required for model generation, calibration and validation. The rise of the Internet of Things (IoT) made energy-efficient, low-cost devices for WDS-monitoring and data transmission available and applicable for the continuous monitoring of large-scale systems. Nonetheless, the potential and limitations of such devices for WDS-monitoring has yet to be determined.

This work aims to determine the effects of sensor accuracy, varying temporal resolutions and failure rates of pressure monitoring devices on the performance of algorithms for leak detection and leak localization in WDS. Based on an extensive statistical analysis of sensor data from real-world case studies and laboratory experiments, algorithm performance should be tested and assessed. The ultimate goal is to derive performance measures for monitoring device configuration and performance optimization for future deployments in WDS.