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Machine Intelligence for Smart Water System
Abstract:

The freshwater resources have been constantly depleting worldwide and it is forecasted that several countries will face acute water shortage in coming few years. The alarming situation, also highlighted in a recent United Nations study, ?Global Water Crisis: The Facts?, calls for an efficient management of water distribution systems in cities and towns. It is really surprising to see that the issue of water management is continuously ignored across, and most of the cry is about water scarcity.

With an increasing interest in Artificial Intelligence based scientific applications, we suggest a ?Smart Water System?, which fully exploits state-of-art Artificial Intelligence and Machine Learning technologies. The system would provide an Information Management System for collecting, storing, and monitoring of water system related data including water sources (e.g. reservoir) data, pipe network data, customer service data and business data (e.g. billing). The data would be processed by an ?Artificial Intelligence Engine? to evaluate and optimize specific business operations of a water supply system.

Research empowered by machine intelligence in the field of smart water distribution systems would lead to development of data-driven computational prototypes for addressing the following research challenges:

- On-line Simulation of Water Distribution Network
- Water Demand Prediction
- Operational Optimization
- Leakage/Pipe-Burst Detection and Localization
- Pressure and Flow Sensors Placement Optimization

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