

Bayesian Optimization for Control of Stormwater Networks

Retrofitting the existing stormwater networks with sensors and actuators will enable the cities to monitor and control the performance of these networks in near real-time. Unlike the current state-of-the-art stormwater networks, these “smarter” stormwater networks would have the ability to tailor their response to individual storm events. In this work, we present a completely automated data-driven approach based on Bayesian optimization for identifying an optimal strategy for controlling these networks. This approach, through exhaustive simulation quantifies the solution space to identify an appropriate strategy for achieving the desired objective. We demonstrate the use of this approach for quantifying the uncertainty associated with stormwater networks and then conclude by identifying the limitations of the proposed approach.