



## Cyber physical system perspective for smart water management in a campus

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### ABSTRACT

Smart water management in a large-scale campus is a good instance of cyber physical system (CPS). For realising this instantiation calls, a systematic framework together with the actual implementation of the associated modules needs to be devised. In this paper, the key issues of monitoring/sensing, networking, and computation parts put forward toward a deployable solution are proposed. Monitoring and Networking involving appropriate sensing and data transmission to monitor the water flow in the storage tanks at National Institute of Technology, Surathkal, Karnataka, India, are worked out to a mature stage. This paper captures essential details of these technical contributions, including necessary customisation and enhancement of the existing technologies. In the direction of addressing the data analytics of the computing part, the issue of imputing the missing values has been considered. An extensive set of results and comparisons obtained by applying different algorithms to the collected data are also presented. The technical contributions of this paper form a strong base toward the CPS realisation in the Campus, resulting in efficient water management when augmented with further analytics and modeling to address scalability.

*Keywords:* Cyber physical system; Water management; Data analytics; Imputing missing techniques; Computation

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