

UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT of
CIVIL AND ENVIRONMENTAL ENGINEERING

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" The "smart water" application on urban water network distribution real-time monitoring and control system "

by

[Prof. Jeffrey Y. CHENG](#)

Associate Professor of Civil Engineering, School of Engineering, University of Guam, Guam

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Abstract

The “smart water systems” have been introduced to China since 2010 summer in EXPO 2010, which could be the leading way to improve the urban water distribution problems. In the network age of “4G” going to be “5G”, leveraging recent advances in technologies surrounding the Internet devices, urban water distribution systems are poised to transform water supplies management by enabling ubiquitous real-time sensing and control.

This paper introduces the methodology of urban water distribution system data collection, database creation and management, GIS and BIM applications, EPA-NET hydraulic and water quality model creation, real-time sensing and control application. And combined them into a completed real time urban water distribution monitoring program, the program not only be able to monitoring the metro water distribution but also utilize artificial intelligence (AI) and machine learning to predict the potential issues in the system and provide the optimized solution.

Biography

Prof. Jeffrey Y. CHENG is currently an Associate Professor of Civil Engineering of the University of Guam. Prof. Cheng obtained his PhD Degree in Civil Engineering from the University of Colorado in 2011. He has been teaching in St Cloud State University, University of Colorado Denver, Metro State University of Denver and Los Angeles Pierce College before his current position in University of Guam. Prof. Cheng also has rich industrial experience for over 20 years, he is currently a senior water resource engineering in Engineering Analytics Inc. Ft Collins CO. Prof. Zhang is working on multiple research projects namely "Flood Mitigation and Water Quality Improvement of City McGregor", "Quarry Park and Nature Preserve Water Quality Concern Analysis", "Digital Open Channel Flume Design and Construction" , "Statistical hydrology data analysis for Minnesota regional area" and "Reclamation Action Plan, Design and Construction of Idorado Mine Site".

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