A Study on the Relative Importance of Digital Twin Technology in Daegu Smart City

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Abstract:

This study applied Analytic Hierarchy Process (AHP) to select and evaluate digital twin technology necessary for efficient construction and operation of a smart city in Daegu, a major city in South Korea. Through this, five main criteria and related sub-criteria were established, including “Internet of Things (IoT) and cloud-based technology,” “3D modeling and visualization technology,” “big data analysis and AI-based prediction technology,” “simulation and realistic technology,” and “citizen participation and collaboration platform technology,” and the importance of technology according to each criterion was evaluated. Based on the five main criteria presented in this study, the optimal combination of digital twin technologies that meet the various requirements of a smart city project can be determined by evaluating how well each technology meets each sub-criteria. The importance of each criterion is quantified through the AHP methodology procedure, and based on this, a method for applying digital twin technologies is proposed.

Keywords:

Analytic Hierarchy Process (AHP), Daegu Smart City, Digital Twin, Internet of Things (IoT).