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分议题一 人工智能时代建筑教育改革的探索与创新

基于数字孪生系统的智慧化城市设计方法

Smart City Design Method Based on Digital Twin System

摘要: 数字孪生技术作为一种创新的数字化手段, 通过创建虚拟城市模型, 实时监控和管理城市资源, 已成为推动智慧城市建设的重要工具。本文基于数字孪生技术, 介绍了一种智慧城市设计方法, 通过构建轨道站点数字孪生平台对周边区域的空间利用、交通流量、碳排放和商业布局进行动态模拟、优化和评估, 促进了设计过程的实时反馈和调整, 提高了城市设计方案的可实施性与环境友好性, 同时提升了学生在设计创作、技术应用及跨学科合作方面的能力。

关键词: 数字孪生; 智慧城市; 城市设计; 跨学科合作

Abstract: Digital twin technology, as an innovative digital tool, has become an essential instrument for promoting the development of smart cities by creating virtual city models and enabling real-time monitoring and management of urban resources. This paper presents a smart city design approach based on digital twin technology. By constructing a digital twin platform for transit stations, dynamic simulations, optimizations, and evaluations are conducted on the surrounding area's space utilization, traffic flow, carbon emissions, and commercial layout. This approach facilitates real-time feedback and adjustments during the design process, enhances the feasibility and environmental friendliness of urban design solutions, and improves students' abilities in design creation, technical application, and interdisciplinary collaboration.

Keywords: Digital twin; Smart city; Urban design; Interdisciplinary collaboration