عنوان مقاله:

Smartening Urban Underground Spaces – A Case Study of Tehran

محل انتشار:

سومین کنفرانس بین المللی شهر هوشمند، چالش ها و راهبردها (سال: 1402)

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خلاصه مقاله:

The rapid urbanization and the scarcity of surface space have prompted cities to explore innovative solutions, with a significant focus on the transformation of urban underground spaces. This study delves into the concept of "Smartening of Urban Underground Spaces," examining the integration of smart technologies to enhance efficiency, safety, and sustainability in subterranean environments. The research navigates through various dimensions, encompassing technological advancements, data-driven decision-making, and the implications for urban living. The investigation commences with a literature review, mapping the landscape of smart technologies and their applications in urban underground spaces. The study establishes a conceptual framework to guide the exploration, defining the key components of a smart underground ecosystem. Through a mixed-methods approach, the research employs stakeholder interviews, surveys, and advanced data analytics to understand the current state of urban underground spaces and the opportunities presented by smart technologies. Machine learning algorithms and real-time monitoring systems play a pivotal role in capturing and interpreting data, providing insights into structural health, environmental conditions, and emergency response mechanisms. The findings of this research shed light on the transformative potential of smartening urban underground spaces. From optimized energy consumption and traffic flow to predictive maintenance and resilient emergency response systems, smart technologies emerge as catalysts for a sustainable and intelligent subterranean future. The research concludes with actionable recommendations for urban planners, engineers, and policymakers, emphasizing the need for a holistic and integrated approach to smart urban underground development. The documentation includes technical details, algorithms, and visualizations, providing a comprehensive resource for stakeholders involved in shaping the future of subterranean environments. In essence, this study serves as a roadmap for the smartening of urban underground spaces, envisioning a future where data-driven technologies converge to create safer, more efficient, and sustainable subterranean landscapes.

کلمات کلیدی:

Smart Urban Underground Spaces, Machine Learning Algorithms, Urban Planning, Smart Technologies, Subterranean Development.

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