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Editorial: Technological developments in point of interest recommendation for smart and sustainable cities

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Editorial on the Research Topic

[Technological developments in point of interest recommendation for smart and sustainable cities](#)

In the rapidly evolving landscape of urban development, integrating advanced technologies has emerged as a pivotal force in shaping the future of cities worldwide. Among the myriad applications of technology in urban planning, the evolution of Point of Interest (POI) recommendation systems stands out as a crucial development with profound implications for creating smarter and more sustainable urban environments. POI recommendation systems leverage cutting-edge technologies such as Artificial Intelligence (AI), Machine Learning (ML), and Big Data analytics to enhance how cities manage and utilize resources.

These systems are pivotal in suggesting relevant destinations to residents and visitors alike, optimizing transportation routes, promoting local businesses, and enriching urban experiences, thus contributing to sustainable urban mobility. [Pan et al. \(2023\)](#) utilized the spatial information from POI data and formed the functional zones of urban blocks in the Macau Peninsula. The study confirmed the disparity in the concentrations of functional blocks and helped study urban life, promoting a sustainability agenda. [Liu et al. \(2022\)](#) proposed a POI category prediction model to address public health and psychology issues. [Andrade et al. \(2020\)](#) attempted to investigate the possible significance of POI relative to land use classification and propose an alternative to the land use and land cover (LULC) classification strategy prevalent. The influence of these systems extends to supporting local businesses, encouraging tourism, and fostering community engagement by connecting people with events and attractions that align with their interests. [Divya and Mary \(2018\)](#) proposed a business recommendation model based on POI data.

The evolution and implementation of POI recommendation systems in sustainable urban environments are indirectly impacted by several viewpoints, which help to provide a comprehensive understanding of the technological and social elements influencing smart city development ([Elvas et al., 2023](#)). POI systems encourage

environmentally beneficial mobility choices and point users toward energy-efficient buildings and green areas to support sustainable development. By giving users access to real-time noise and air quality data, they also enable healthier lifestyle choices. Collaboration between urban planners, technologists, policymakers, and community stakeholders is necessary for inclusive, equitable, and sustainable implementation.

The papers in this issue cover a range of technology advancements and challenges related to building smart and sustainable cities and examine important factors such as innovative technology, urban infrastructure, and environmental sustainability that influence the landscape in which POI suggestions are implemented.

[Devi and Perumandla](#) explore the intricacies of people's opposition to investing in environmentally friendly homes in Tier-II cities in India. The study reveals important obstacles and drivers influencing people's decisions to undertake greenhouse upgrades by utilizing the Status Quo Bias theory constructs and investigating the impact of inertia. Resistance in this domain is mainly influenced by loss aversion, transition costs, conformity to social norms, and self-efficacy to change. The results highlight people's mental and practical barriers when investing in green homes. This study's insights into barriers and drivers for green home investments can aid POI recommendations to make informed decisions by highlighting eco-friendly properties or businesses. Recommendations could focus on locations that offer cost-effective green solutions, showcase community adoption, or provide resources to increase self-efficacy in sustainable living.

[Khan et al.](#) studied the impact of solar technology and ML-based slum mapping on Islamabad's slums. They found technology crucial for improvement, with factors like gender roles, governance, and crime as key moderators. The study recommends promoting solar energy and addressing crime and governance issues. This research could enhance POI recommendations by incorporating socioeconomic and urban infrastructure data. This approach could lead to more socially aware and contextually relevant suggestions for cities like Islamabad. The findings will aid policymakers and urban planners in Islamabad.

[Acharya and Mohbey's](#) study introduces a novel approach named Recency-based Spatio-Temporal Similarity Exploration (RSTSE) for enhancing POI recommendations in Location-Based Social Networks (LBSNs). This approach leverages recency-based trust estimation among users, categorizing trust into direct and indirect levels, and incorporates factors such as venue popularity, temporal recency, radial proximity, and transitivity. The method is two-phased, initially extracting POIs based on the preferences of potential neighbors and subsequently employing Neural Collaborative Filtering (NCF) to capture user-POI interactions.

The research by [Jabbari et al.](#) identified eight major obstacles to IoT adoption in Saudi Arabia's irrigation industry. They proposed a fuzzy GRA/AHP strategy to overcome these challenges. Integrating smart irrigation data could enhance POI recommendations for agriculture-related locations in Saudi Arabia. This integration could address issues with internet connectivity and mobile data delivery. As a result, it would improve the accuracy and timeliness of POI suggestions. Overall, this approach could significantly enhance the performance of POI recommendation systems in the region.

Reviewing electric vehicle (EV) charging stations in India, [Gulzar et al.](#) stress the significance of these facilities for EV adoption and emission reduction. Designed to help EV customers plan, the study examines the types and distribution of charging facilities. It covers the advantages of EVs, renewable energy sources for charging, and new developments like wireless charging and battery switching. The report emphasizes the need to charge infrastructure to encourage sustainable mobility in India. Along with encouraging solar energy, the government should take steps to combat crime and maintain reliable governance. It could improve POI recommendations by incorporating charging facility types and distribution information. This would allow navigation and travel planning apps to suggest routes and destinations that are more EV-friendly, enhancing the user experience for electric vehicle owners.

[Chen et al.](#) suggest a blockchain-based approach to fight corruption in traffic law enforcement. To guarantee accountability and transparency, the system employs IPFS and blockchain. It aims to reduce vehicle accidents caused by unethical behavior. Under stress testing, experimental results demonstrate low latency (2.01 s max) and high throughput (300 transactions/s). This blockchain-based approach could provide more transparent and dependable traffic data, which could enhance POI suggestions. The data utilized to generate POI recommendations could be more accurate with more accountability in traffic law enforcement, resulting in more intelligent recommendations for routes and destinations. The report states that blockchain technology can improve traffic safety and lessen law enforcement corruption.

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