University of Essex Online

Module: Research Methods and Professional Practice

Unit: 4 – Literature Review Outline

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Machine Learning Applications in Urban Road Data Mining: A Literature Review

The rapid urbanisation and technological progress enable machine learning (ML) to be applied to urban road analysis to design sustainable, efficient, safe transportation systems. This paper reviews the application, methodology, and impact of ML techniques applied by road data mining on urban roads. It also seeks to discover how ML techniques are implemented in urban road data mining. With cities growing ever larger, optimisation and understanding of road networks are increasingly important for mitigating the problems that road congestion, safety, and the environment represent. Casali et al. (2022) discuss how ML and Artificial Intelligence (AI) are "promising to revolutionise how we can analyse and plan our urban areas, providing new leads to pursue a sustainable city agenda." The analysis of data generated in urban environments offers a great source of information, thanks to machine learning tools and decision-making in intelligent transportation systems, which can now be made more informed. With the increasing application of ML in urban computing, cities are now being empowered (Wang and Cao, 2021) to become smarter, more efficient and more sustainable.

Reference List

Casali, Y., Aydin, N.Y. and Comes, T. (2022). Machine learning for spatial analyses in urban areas: a scoping review. *Sustainable Cities and Society*, 85, p.104050. doi:https://doi.org/10.1016/j.scs.2022.104050.

Wang, S. and Cao, J. (2021). AI and Deep Learning for Urban Computing. *Urban Informatics*, pp.815–844. doi:https://doi.org/10.1007/978-981-15-8983-6_43.