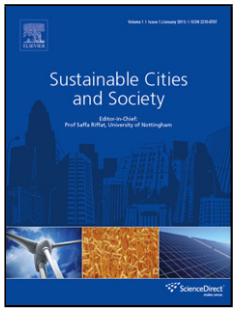

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COVERS-UP: Collaborative Verification of Smart User Profiles for social sustainability of smart cities

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Abstract

Non-dedicated sensing models in smart cities, such as social sensing, aim at recruiting smart users while mobile social platforms' vulnerability to identity theft attacks introduces the risks of de-incentivizing mobile users against participating and spreading disinformation through social platforms in case of successful identity theft attempts. In this paper, we present a mobile edge-based collaborative solution against identity theft over social platforms by taking advantage of the convergence of social, wireless, and mobile networks in the 5G Era. The collaborative framework delegates detection of a potential identity theft to other smart users who are the connections of the potential victim over a social platform. The collaborating smart users are not involved in semantic analysis but are assigned a subset of the contextual features of the smart user under review. We present thorough performance evaluation by using real social platform data in simulations. The numerical results show that collaboration among smart users can reveal anomalous behavior on the social accounts of other participants with a success ratio at the order of $>90\%$. Furthermore, we show that False Positive (FP) decisions can be mitigated while False Negatives, which are less severe than FPs, can be reduced down to the order of $\leq 3\%$.

Index Terms

Mobile social networks, smart cities, social sustainability, user verification, machine learning

I. Introduction

With the widespread use of mobile smart devices, conventional dedicated sensing concept has been evolving to participatory sensing, social sensing and soft-sensing to aid and improve

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