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Open Issue and Challenges on Inferring Social Ties and Predicting User Mobility using Markov Chain Model

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Abstract—Social networks formed based on location and studying human mobility has a significant impact on social relationships. Traditional techniques infer and characterize mobility based on telecommunication single-sourced data that lags in achieving optimum accuracy. However, multiple data sources are combined so they can enhance prediction accuracy. Based on combining various data source, we propose a consolidated Markov Chain Model. Also, multisource data sets help to infer social ties precisely. In support of the theory, we studied real data set of Chinese Telecom Company and conducted simulation based on the entire dataset. We achieved 81% accuracy in the combined data source as compared to the singular data source. Moreover, we highlighted the limitation of using only CDR data set that leads to a wrong inference. We also discover correlations between social ties formation and close acquaintance, which is a research guideline for future investigation.

Keywords—Social Network Analysis, Mobility, CDR, Data mining