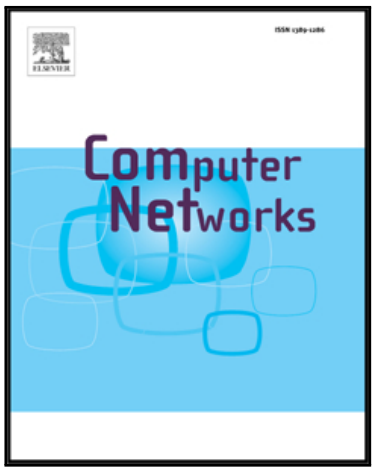

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Private Mobility-cast for Opportunistic Networks

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Abstract

In this paper, we introduce the notion of mobility-cast in opportunistic networks, according to which a message sent by a user S is delivered to users with a mobility pattern similar to that of S – collectively named *place-friends*. Motivation for delivering a message to place-friends stems from the fact that current social acquaintances are likely to be place-friends. Most importantly, it has been recently found that a large fraction of *new* social contacts come from place-friends. After introducing mobility-cast, we present a privacy-preserving mobile-cast protocol based on secure two-party computation. The effectiveness of the protocol in delivering messages to place-friends is demonstrated by means of analysis and extensive simulations based on a realistic mobility model. In the last part of the paper, we present two alternative implementations of mobility-cast on the Android platform, and test their computational performance on a number of different smartphones. Overall, the results presented in this paper show that privacy-preserving mobility-cast can be effectively implemented with current mobile phone technology.

Keywords: Opportunistic Routing, Mobility-Cast, Human Mobility, Privacy, Secure-Two party Computation.

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