

MASTER'S THESIS

Secure proximity queries in mobile geo-social services

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Secure Proximity Queries in Mobile Geo-Social Services

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Abstract

Mobile geo-social networking services are believed to be the killer application for the next-generation mobile computing. A basic service in mobile geo-social networks is the *proximity service*, which alerts a mobile user when any of his/her friends is in the geographical vicinity, so as to enrich social activities such as collaborative working and information sharing. To realize such services, existing systems collect location information from mobile users for proximity computation. However, the disclosure of private location information to the service provider raises severe privacy concerns. In this thesis, we propose and develop two novel privacy-preserving solutions for mobile proximity query and monitoring services. More specifically, we propose a dynamic-grid-overlay solution for distance-based proximity services and a secure-line-computation solution for vicinity-region-based proximity services. Efficient location update and query reevaluation algorithms for monitoring proximity services are also developed for both solutions. Simulation results demonstrate that our proposed solutions are effective and scalable under various system settings and user moving speeds.

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