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移动环境下LBS位置隐私保护

彭志宇* 李善平*

浙江大学计算机科学与技术学院 杭州 310027

Protecting Location Privacy in Location-based Services in Mobile Environments

Peng Zhi-yu Li Shan-ping*

College of Computer Science and Technology, Zhejiang University, Hangzhou 310027, China

摘要 用k匿名模型对基于位置信息的服务(LBS)中的位置隐私进行保护是近年来研究的热点。在移动用户不断发出查询的场景下，该文提出了移动模式攻击(MPA)，使得传统的针对孤立查询的隐私保护算法均失效。基于熵理论，提出了熵匿名度度量，并以此为基础提出了移动环境下的模糊化算法Mclique，实验证明其有效地抵御了MPA攻击。通过简化Mclique算法中熵的计算，提出了快速模糊化算法Fclique，实验证明Fclique不仅仍具有较强的MPA抵御能力，且极大提高了时间效率。

关键词： 移动模式攻击 隐私保护 *k*匿名 基于位置信息的服务

Abstract： The k-anonymity model is employed to protect the location privacy in Location-Based Services (LBS) in recent years. A Moving-Pattern Attack (MPA) is presented, in a scenario that the moving user keeps delivering queries. It is shown that traditional algorithms fail in this attack. In order to protect against MPA, a novel anonymity measurement based on entropy is proposed, which leads to a cloaking algorithm under mobile environments, i.e. Mclique. Experiments show that Mclique protects effectively user privacy against MPA. By simplifying the computing of entropy in Mclique, a fast cloaking algorithm, Fclique, is proposed. Experiments show that Fclique is capable of surviving MPA, and reduces greatly the time complexity as well.

Keywords： Moving Pattern Attack (MPA) Privacy protection *k*-anonymity Location-Based Service (LBS)

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通讯作者: 彭志宇 Email: pzy202@163.com

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