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计算机安全

对位置信息服务的连续查询攻击算法

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摘要： 为了解决连续查询攻击算法给位置信息服务(LBS)带来的安全隐患,基于已有的k-匿名化Cloaking算法提出了一种新的连续查询攻击算法——CQACA。该算法首先利用熵和查询匿名度量定义了查询识别率的目标函数,并结合元胞蚁群给出了目标函数的求解算法。最后,利用移动对象数据生成器进行实验,深入研究了影响CQACA的关键因素,同时对比分析了该算法与Cloaking算法的性能差异:CQACA与实际数据的误差为13.27%,而Cloaking算法则为17.35%。结果表明CQACA具有一定的有效性。

关键词： 位置信息服务 连续查询攻击算法 查询匿名度量 查询识别率 元胞蚁群

Continuous queries attacking algorithms of location based service

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Abstract: In order to mitigate the security risks in Location Based Service (LBS) with continuous query attacking algorithm, a new algorithm — Continuous Queries Attacking algorithm based on Cellular Ant (CQACA) was proposed by k-anonymity measurement. At first, the objective function of query recognition rate was defined with entropy and anonymity measurement, and the algorithmic process of objective function was presented by cellular ant. Finally, a simulation with the moving object data generator was conducted to study the key factors of CQACA, and the performance between CQACA and Cloaking was compared. Compared with the actual trajectory, the error of CQACA was 13.27%, and error of Cloaking was 17.35%. The result shows that CQACA has better effectiveness.

Keywords: Location Based Service (LBS) continuous query attacking algorithm anonymity measurement query recognition rate cellular ant colony

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