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Detection of Monomorphic Nodes in Large Graphs to Improve Privacy of Users in Online Social Networks

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Abstract

Online social networks have attracted billions of users from all around the world. It has been predicted that these networks will evolve such that they incorporate and fuse data gathered from various devices associated with the users, such as smartphones, smartwatches, and other daily-used smart IoT devices. Users' data at the scale of multi-billion records will be generated, collected, and analyzed per second to improve the quality of their lives. It means that the collocated data may be used by attackers to reveal sensitive information about the users. A typical approach is to counter these attacks is to hide the explicit information about the users (for example, hiding their names and identities). However, it has been shown that using a set of non-sensitive data (called implicit data), the attacker could successfully identify the victims. In this presentation, we discuss the modeling of such a problem using graph theory and the complexity of the existing detection algorithms. Then we explore and analyze a distributed approach to detect users whose identities are vulnerable in very large datasets i.e., up to thousands of billions of entities, in computationally feasible time.

Biography

Hossein Shafiei received the B.Sc. Degree in Computer Sciences, from Shahid Beheshti University, Tehran, Iran. After achieving his M.Sc. in Computer Engineering, he obtained his Ph.D. from the University of Tehran in Iran under the supervision of Dr. Ahmad Khonsari. Currently, he is a postdoctoral researcher at IPM, Iran. His interest areas are network security and privacy, online social networks, distributed computing, and algorithms.

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