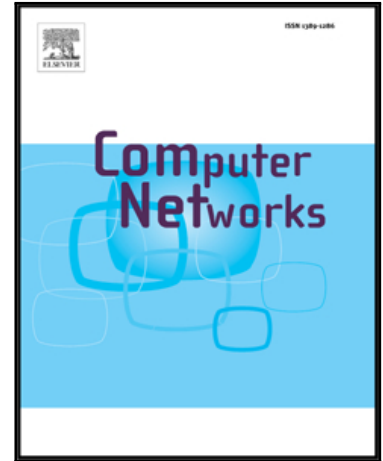


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A Robust Authentication Scheme Based on Physical-Layer Phase Noise Fingerprint for Emerging Wireless Networks

Caidan Zhao^{a,*}, Minmin Huang^b, Lianfen Huang^a, Xiaojiang Du^c,
Mohsen Guizani^d

^a*Dept. of Communication Engineering, Xiamen University, Xiamen, China.*

^b*Dept. of Electronic Engineering, Xiamen University, Xiamen, China.*

^c*Dept. of Computer and Information Sciences, Temple University, USA*

^d*University of Idaho, USA*

Abstract

The increasing demand for different types of wireless communication services and the advanced wireless technology has led to the presence of emerging networks. However, wireless communication allows attackers to send useless information into the network through the process of multi-hop transmission, which results in the forwarding of many invalid data and the consumption of energy. To address this, the network needs effective identity authentication. In this paper, we propose a new robust authentication algorithm based on the phase noise fingerprint of the physical-layer (PHY). Furthermore, we propose a security authentication scheme of combined PHY fingerprints to ensure the survivability of the network in the presence of attacks or intrusions. The experimental results show that the identification rate of the simple multiple kernel learning (SimpleMKL) reaches 98.25%, and the scheme is robust against malicious nodes and efficient with low computation and storage.

Keywords: PHY security, survivability, RF fingerprint, authentication scheme.

*Corresponding author. E-mail address: zcd@xmu.edu.cn

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