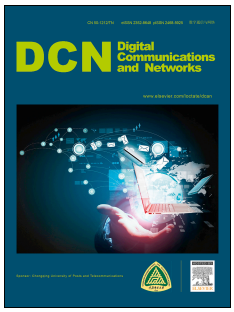
Accepted Manuscript



A blockchain future to Internet of Things security: A position paper

Mandrita Banerjee, Junghee Lee, Kim-Kwang Raymond Choo

PII: S2352-8648(17)30290-0

DOI: 10.1016/j.dcan.2017.10.006

Reference: DCAN 118

To appear in: *Digital Communications and Networks*

Received Date: 11 September 2017

Revised Date: 10 October 2017

Accepted Date: 30 October 2017

Please cite this article as: M. Banerjee, J. Lee, K.-K.R. Choo, A blockchain future to Internet of Things security: A position paper, *Digital Communications and Networks* (2017), doi: 10.1016/j.dcan.2017.10.006.

A Blockchain Future to Internet of Things Security: A Position Paper

Mandrita Banerjee[1], Junghee Lee[1], Kim-Kwang Raymond Choo[2,1]

[1]Department of Electrical and Computer Engineering, University of Texas at San Antonio, San Antonio, TX 78249, USA

[2] Information Systems and Cyber Security, University of Texas at San Antonio, San Antonio, TX 78249, USA

mandrita82@gmail.com, Junghee.Lee@utsa.edu, raymond.choo@fulbrightmail.org

Abstract

Internet-of-Things (IoT) are increasingly found in civilian and military contexts, ranging from Smart Cities to Smart Grids to Internet-of-Medical-Things to Internet-of-Vehicles to Internet-of-Military-Things to Internet-of-Battlefield-Things, etc. In this paper, we survey articles presenting IoT security solutions published in English since January 2016. We make a number of observations, include the lack of publicly available IoT datasets that can be used by the research and practitioner communities. Given the potential sensitive nature of IoT datasets, there is a need to develop a standard for the sharing of IoT datasets among the research and practitioner communities and other relevant stakeholders. We then posit the potential for blockchain technology in facilitating secure sharing of IoT datasets (e.g. using blockchain to ensure the integrity of shared datasets) and securing IoT systems, before presenting two conceptual blockchain-based approaches. We then conclude this paper with nine potential research questions.

Keywords

Blockchain, Blockchain security, Collaborative security, Internet of Military Things, IoT dataset, IoT self-healing, IoT security, Intrusion prevention system, Predictive IoT security, Predictive security

1 Introduction

Technologies have changed the way we live, particularly in our data-driven society. This is partly due to advances in semiconductor and communication technologies, which allow multitudes of devices to be connected over a network providing us ways to connect and