Power Consumption Estimation of SHA-3 for the Internet of Things Applications

M. Tariq Banday and Issmat Shah Masoodi

Abstract Recent trends of Internet of Things (a network-connected wirelessly between smart devices and the Internet) and ubiquitous/pervasive computing require everything to be IP addressable and accessed on the Internet. Internet of Things (IoT), a rapidly developing market which not only connects people and things but also billions of devices and smart objects. A steady increase in security vulnerabilities has been witnessed with the widening of the Internet of Things. The accuracy and reliability of data also referred to as data integrity makes certain that data is not modified while its transfer, storage, or retrieval. For the verification of data integrity, generally, hash functions are used. In order to provide the real-time or near real-time checking of data integrity, hardware implementation of cryptographic hash functions is necessary for the Internet of Things. The IoT world constitutes billions of devices that can sense the data, share information, and communicate it over Internet Protocol (IP) network. The present work presents an implementation of the Secure Hash Algorithm—3 (SHA–3) on NS2 and undertakes power analysis of the algorithm for the Internet of Things applications.

Keywords Cryptography · Secure hash algorithm · Data integrity · Internet of Things

1 Introduction

The Internet of Things (IoT) is transpiring to be an emerging deliberation in the field of research and practical implementation in recent years. IoT is a representation that includes all the objects with the capability to sense, process, and communicate with other devices making use of the Internet. In recent years, the increase in addition to sensors and the gadgets connected to the Internet has grown immensely because of reduced connectivity cost and general access of broadband Internet [1–3].

M. Tariq Banday (✉) · I. S. Masoodi
Department of Electronics and Instrumentation Technology, University of Kashmir, Srinagar, Jammu and Kashmir 190006, India
e-mail: sgrmtb@yahoo.com