

INFORMATION OF THE DOCTORAL THESIS

Thesis title: **A security framework based-on blockchain for the Internet of Things**

Speciality: **Information System**

Code: **9.48.01.04**

PhD. Candidate: Huynh Thanh Tam

Name of the research supervisors:

1. Assoc. Prof. Nguyen Dinh Thuc
2. PhD. Tan Hanh

Training institution: Posts and Telecommunications Institute of Technology

THE SCIENTIFIC CONTRIBUTIONS

- (1) Propose a new security framework based on blockchain for IoT. In which, the method of transaction verification and data consensus on the blockchain ledger is proposed.
- (2) Propose the privacy-preserving data storage and sharing functions in the proposed security framework.
- (3) Propose the time-based access control function in the proposed security framework.

APPLICATIONS IN PRACTICE AND OPENED ISSUES FOR FURTHER STUDIES

Applications in practice

The proposed security framework can be applied to an IoT network with devices connected via IP technology, the application layer in IoT architecture will be used to build interactive service applications with the security functions provided in the framework.

Opened issues for further study

- (1) Research the optimal way of organizing WL and VL in the architecture of the proposed security framework for each specific application.

(2) Study in detail how to build and deploy smart contracts in the data sharing function in the proposed secure framework.

(3) Research on optimization of group signature method to improve computational efficiency in data sharing function in the proposed security framework.

(4) Research the limitations of IPFS network, study how to build and deploy the proposed algorithms and build the installation and testing process for the proposed framework. Then, perform a quantitative assessment of the security performance of the security functions in the proposed framework.

Supervisors

Ph.D. candidate

NGUYEN DINH THUC

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