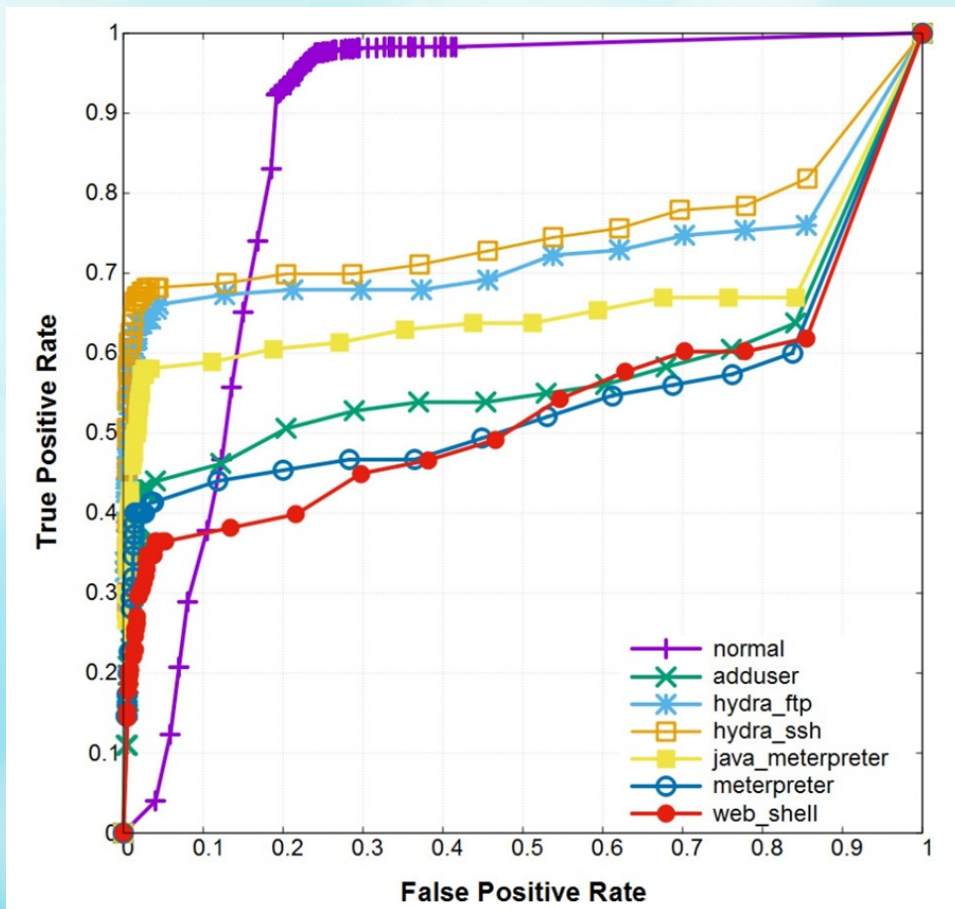


# Journal of Information Security



ISSN: 2153-1234



# Journal Editorial Board

ISSN: 2153-1234 (Print)    ISSN: 2153-1242 (Online)

<http://www.scirp.org/journal/jis>

---

Editor-in-Chief

**Prof. Gyungho Lee**

Korea University, South Korea

Editorial Board (According to Alphabet)

<b>Prof. Chris Cannings</b>	University of Sheffield, UK
<b>Dr. Xiaochun Cheng</b>	Middlesex University, UK
<b>Dr. Ashraf Darwish</b>	Helwan University, Russia
<b>Prof. Javier Diaz-Carmona</b>	Instituto Tecnológico de Celaya, Mexico
<b>Prof. Marina L. Gavrilova</b>	University of Calgary, Canada
<b>Prof. Vic Grout</b>	Glyndwr University, UK
<b>Prof. Le Gruenwald</b>	University of Oklahoma, USA
<b>Prof. Sun-Yuan Hsieh</b>	National Cheng Kung University, Chinese Taipei
<b>Prof. Lucas Chi Kwong Hui</b>	The University of Hong Kong, China
<b>Prof. Min-Shiang Hwang</b>	National Chung Hsing University, Chinese Taipei
<b>Prof. Jiejun Kong</b>	Beijing Institute of Technology, China
<b>Dr. Fagen Li</b>	University of Electronic Science and Technology of China, China
<b>Prof. Giannis F. Marias</b>	Athens University of Economics and Business, Greece
<b>Prof. Stavros D. Nikolopoulos</b>	University of Ioannina, Greece
<b>Prof. Changwoo Pyo</b>	Hongik University, South Korea
<b>Prof. John A. Springer</b>	Purdue University, USA
<b>Prof. Sofiene Tahar</b>	Concordia University, Canada
<b>Prof. Lina Wang</b>	Wuhan University, China
<b>Dr. Ronald D. Williams</b>	University of Virginia, USA

# Table of Contents

Volume 6    Number 3

July 2015

## Which Bit Is Better in Least Significant Bit?

F. E. M. Al-Obaidi, A. J. M. Ali.....161

## Evaluating the Efficiency and Effectiveness of a Federated SSO Environment Using Shibboleth

P. Kamal, S. Mustafiz, F. Md. A. Rahman, R. Taher.....166

## Utility-Based Anonymization Using Generalization Boundaries to Protect Sensitive Attributes

A. A. Hussien, N. R. Darwish, H. A. Hefny.....179

## Palm Vein Authentication Based on the Coset Decomposition Method

M. Sayed.....197

## Mobile Phishing Attacks and Mitigation Techniques

H. Shahriar, T. Klintic, V. Clincy.....206

## Enhancements in the Security Level for Wireless Sensor Network

A. M. Kishk, N. W. Messiha, N. A. El-Fishawy, A.-E. A. Alkafs, A. H. Madian.....213

## Keyboard Dependency of Personal Identification Performance by Keystroke Dynamics in Free Text Typing

Y. Matsubara, T. Samura, H. Nishimura.....229

## Gröbner Bases Method for Biometric Traits Identification and Encryption

M. Sayed.....241

## Evaluation of Modified Vector Space Representation Using ADFA-LD and ADFA-WD Datasets

B. Borisaniya, D. Patel.....250

## **Journal of Information Security (JIS)**

### **Journal Information**

#### **SUBSCRIPTIONS**

The *Journal of Information Security* (Online at Scientific Research Publishing, [www.SciRP.org](http://www.SciRP.org)) is published quarterly by Scientific Research Publishing, Inc., USA.

#### **Subscription rates:**

Print: \$79 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: [sub@scirp.org](mailto:sub@scirp.org)

#### **SERVICES**

##### **Advertisements**

Advertisement Sales Department, E-mail: [service@scirp.org](mailto:service@scirp.org)

##### **Reprints (minimum quantity 100 copies)**

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: [sub@scirp.org](mailto:sub@scirp.org)

#### **COPYRIGHT**

##### **COPYRIGHT AND REUSE RIGHTS FOR THE FRONT MATTER OF THE JOURNAL:**

Copyright © 2015 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

##### **COPYRIGHT FOR INDIVIDUAL PAPERS OF THE JOURNAL:**

Copyright © 2015 by author(s) and Scientific Research Publishing Inc.

##### **REUSE RIGHTS FOR INDIVIDUAL PAPERS:**

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

##### **DISCLAIMER OF LIABILITY**

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

#### **PRODUCTION INFORMATION**

For manuscripts that have been accepted for publication, please contact:

E-mail: [jis@scirp.org](mailto:jis@scirp.org)



# Journal of Information Security

ISSN 2153-1234 (Print) ISSN 2153-1242 (Online)  
<http://www.scirp.org/journal/jis>

JIS, a quarterly journal, publishes research and review articles in all important aspects of information security. Both experimental and theoretical papers are acceptable provided they report important findings, novel insights, or useful techniques in these areas.

## Editor-in-Chief

Prof. Gyungho Lee

Korea University, South Korea

## Subject Coverage

JIS aims to provide a platform for scientists and academicians all over the world to promote, share, and discuss various new issues and developments in different areas of information security. All manuscripts submitted to JIS must be previously unpublished and may not be considered for publication elsewhere at any time during JIS's review period. Additionally, accepted ones will immediately appear online followed by printed in hard copy. The topics to be covered by Journal of Information Security include, but are not limited to:

Access Control	Intrusion Detection
Anti-Virus and Anti-Worms	Key Management and Key Recovery
Authentication and Authorization	Language-Based Security
Biometric Security	Network Security
Cryptography	Operating System Security
Data and System Integrity	Risk Evaluation and Security Certification
Database Security	Security and Privacy for Social Computing
Distributed Systems Security	Security Evaluation
Electronic Commerce Security	Security for Mobile Computing
Fraud Control	Security Models
Grid Security	Security Protocols
Information Hiding and Watermarking	Signature and Key Agreement Protocol
Information Privacy	Software Security
Information Security Engineering	System Security
Intellectual Property Protection	Trusted Computing and Trustworthy Computing Technology

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the *JIS*.

## Notes for Intending Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

## Website and E-Mail

<http://www.scirp.org/journal/jis>

E-mail: [jis@scirp.org](mailto:jis@scirp.org)