PROGRAM GUIDE

MobiSec 2018

The 3rd International Symposium on Mobile Internet Security

Precious memories from MobiSec 2018 in Cebu
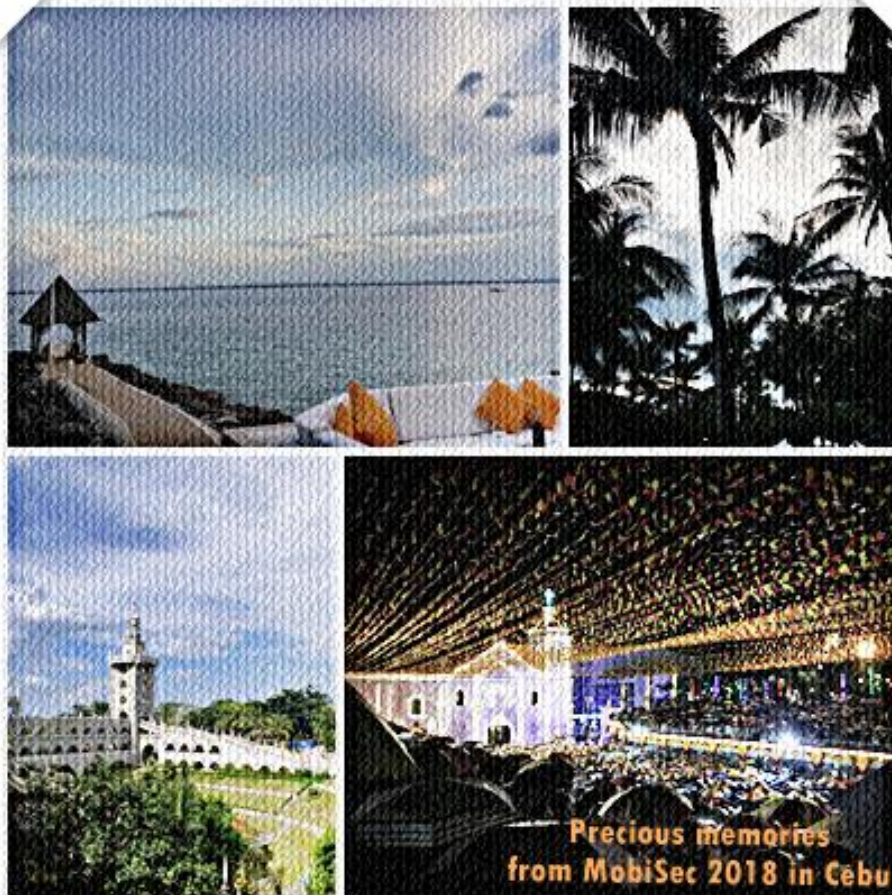
Waterfront Cebu City Hotel & Casino, Cebu, Philippines

August 29-September 1, 2018

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Organized By

KIISC Research Group on 5G Security

Department of Computer Engineering, University of San Carlos

Technically Supported By

Innovative Information Science & Technology Research Group

In Cooperation With

Soonchunhyang University and University of San Carlos

Welcome Message from General Chairs

$\mathcal{W}$elcome to the 3rd International Symposium on Mobile Internet Security (MobiSec 2018), which is held from August 29 (Wednesday) to September 1 (Saturday), 2018 in Cebu, Philippines.

The mobile Internet technologies have revolutionized the aspects of our life by fortifying daily works through different mechanisms such as the Internet of Things, Data Analytics, Internet of Drones, Blockchain, etc. These technologies have given a sizably voluminous paradigm shift to our current work standards; however, these suffer from various kinds of security threats, which need consistent monitoring and tracking for making their operational environments secure and trustable. The latest technologies, e.g. distributed mobility management, mobile internet of things, 5G networks, and so forth, continuously have presented new security challenges, which are to be addressed through consistent efforts of people from both the industry as well as academia.

It is of paramount consequentiality to further study mobile Internet security. MobiSec in its third year in 2018 aims to assemble the academic and industrial researchers working on different aspects to exchange conceptions and explore incipient research directions for addressing the challenges of mobility Internet security. MobiSec 2018 focuses to grow as one of the leading symposiums with a primary fixate on the issues pertaining the security, privacy, and trust of mobile Internet security.

This time, among many manuscripts from all over the world, 38 papers are accepted for presentation after a rigorous peer-review process where each submission is reviewed by at least two TPC members. Moreover, this symposium is further powered by the keynote entitled "Application and Development of Fog computing in 5G" by President Prof. (Dr.) Han-Chieh Chao, National Dong Hwa University, Taiwan.

We believe that MobiSec 2018 plays the consequential role of a trigger for further cognate research and technology ameliorations in this consequential subject. Many people have altruistically availed us to prepare and organize the MobiSec 2018 symposium. Conclusively, we would relish elongating our sincere thanks not only to all authors for their countless contributions, but withal to the technical program committee members for their hard and excellent works.

MobiSec 2018 General Chairs:
Fang-Yie LEU, Tunghai University, Taiwan
Ilsun YOU, Soonchunhyang University, Republic of Korea

Symposium Organization

General Chairs
- Fang-Yie Leu (ThungHai University, Taiwan)
- Ilsun You (Soonchunhyang University, Republic of Korea)

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Keynote Speaker

Prof. Han-Chieh Chao

President
National Dong Hwa University, Taiwan

Affiliation
- Department of Electrical Engineering, National Dong Hwa University, Halien, Taiwan
- Department of Computer Science and Information Engineering and the Department of Electronic Engineering, National Ilan University, I-Lan, Taiwan

Keynote title: Application and Development of Fog computing in 5G

Abstract

The 3G and 4G mobile communications had been developed for many years. The 5G mobile communication is scheduled to be launched in 2020. In the future, a wireless network is of various sizes of cells and different type of communication technologies, forming a special architecture of Heterogeneous Networks (HetNet). In order to meet the network request of a large number of terminal devices, the transmission efficiency and resource allocation of the network are become important factors. Previous research often pushed computation and storage resource into the cloud. Although Cloud Computing provides backend solution for processing huge data streams and computations, the fault tolerance and performance of cloud computing will directly affect the user. The process of uploading and downloading data to the cloud also causes a large amount of network transmission delay. In order to solve above problems, fog computing has been proposed as a potential solution. This keynote speech will share the Application and Development of Fog Computing in 5G.

Speaker bio

Han-Chieh Chao received his M.S. and Ph.D. degrees in Electrical Engineering from Purdue University, West Lafayette, Indiana, in 1989 and 1993, respectively. He is currently a professor with the Department of Electrical Engineering, National Dong Hwa University, where he also serves as president. He is also with the Department of Computer Science and Information Engineering and the Department of Electronic Engineering, National Ilan University, Taiwan; College of Mathematics and Computer Science, Wuhan Polytechnic University, Wuhan, China, and Fujian University of Technology, Fuzhou, China. He was the Director of the Computer Center for Ministry of Education Taiwan from September 2008 to July 2010. His research interests include IPv6, Cross-Layer Design, Cloud Computing, IoT, and 5G Mobile Networks. He has authored or co-authored 4 books and has published about 400 refereed professional research papers. He has completed more than 150 MSEE thesis students and 11 Ph.D. students. Dr. Chao has been invited frequently to give talks at national and international conferences and research organizations. He serves as the Editor-in-Chief for the Institution of Engineering and Technology Networks, the Journal of Internet Technology, the International Journal of Internet Protocol Technology, and the International Journal of Ad Hoc and Ubiquitous Computing. He is a Fellow of IET (IEE) and a Chartered Fellow of the British Computer Society. Due to Dr. Chao's contribution of suburban ICT education, he has been awarded the US President's Lifetime Achievement Award and International Albert Schweitzer Foundation Human Contribution Award in 2016.

Program Overview

Wednesday, 29th August, 2018	
06:00PM-08:00PM	Welcome Reception

Thursday, 30th August, 2018	
08:10AM-05:00PM	Registration
08:30AM-10:00AM	MobiSec 2018 Session 1
10:00AM-10:30AM	Coffee Break
10:30AM-12:00PM	MobiSec 2018 Session 2
12:00PM-01:30PM	Lunch
01:30PM-02:00PM	Opening Ceremony
02:00PM-03:00PM	Keynote by Han-Chieh Chao (National Dong Hwa University, Taiwan)
03:00PM-03:30PM	Coffee Break
03:30PM-05:00PM	MobiSec 2018 Session 3
05:00PM-06:00PM	MobiSec 2018 Short Presentation Session
06:30PM-08:30PM	Banquet

Friday, 31st August, 2018	
08:10AM-03:00PM	Registration
08:30AM-10:00AM	MobiSec 2018 Session 4
10:00AM-10:30AM	Coffee Break
10:30AM-12:00PM	MobiSec 2018 Session 5
12:00PM-01:30PM	Lunch
01:30PM-03:00PM	MobiSec 2018 Session 6
03:00PM-03:30PM	Coffee Break
03:30PM-05:00PM	MobiSec 2018 Session 7

Saturday, 1st September, 2018	
08:30AM-09:30AM	Organizers Meeting
09:45AM-04:00PM	Sightseeing Tour

MobiSec 2018 Program

Wednesday, 29th August, 2018

06:00PM-08:00PM	Welcome Reception

Thursday, 30th August, 2018

08:10AM-05:00PM	Registration

08:30AM-10:00AM	MobiSec 2018 Session 1 – Mobile Network an IoT Security1

Session Chair: Dr. Ilsun You (Soonchunhyang University, Republic of Korea)

- **A Fault Tolerance Mechanism for UE Authentication in 5G Networks**
  Fang-Yie Leu, Kun-Lin Tsai, and Cheng-Yan Gu
  Tunghai University, Taiwan

- **Device to Device based Delay Tolerant Networks with Group Priority for Disaster Information Systems**
  Noriki Uchida[1], Haruki Kuga[1], and Yoshitaka Shibata[2]
  [1]Fukuoka Institute of Technology, Japan
  [2]Iwate Prefectural University, Japan

- **Location privacy protection scheme based on self-organizing cryptographic mix-zone in VANETs**
  Tianhan Gao, Xin Xin, and Xinyang Deng
  Northeastern University, China

- **Cryptanalysis of the Anonymous Authentication with Key Agreement Scheme in Wireless Sensor Networks**
  Sooyeon Shin and Taekyoung Kwon
  Yonsei University, Republic of Korea

10:00AM-10:30AM	Coffee Break

10:30AM-12:00PM	MobiSec 2018 Session 2 – Andriod Security

Session Chair: Dr. Hsing-Chung Chen (Asia University, Taiwan)

- **Survey of Dynamic Anti-Analysis Schemes for Mobile Malware**
  Jongsu Lim, Yonggu Shin, Sunjun Lee, Kyuho Kim, and Jeong Hyun Yi
  Soongsil University, Republic of Korea

- **Open-Source Android App Detection considering the Effects of Code Obfuscation**
  Kyeonghwan Lim[1], Jungkyu Han[2], Byoung-chir Kim[1], Seong-je Cho[1], Minkyu Park[3], and Sangchul Han[3]
  [1]Dankook University, Republic of Korea
  [2]NAVER Corp., Repusblic of Korea
  [3]Konkuk University, Republic of Korea

- **Situational Awareness Framework for Threat Intelligence Measurement of Android Malware**
  Mookyu Park[1], Junwoo Seo[1], Jaehyeok Han[1], Haengrok Oh[2], and Kyungho Lee[1]
  [1]Korea University, Republic of Korea
  [2]Agency for Defense Development(ADD), Republic of Korea

- **Dynamic Analysis of Android Apps written with PhoneGap Cross-Platform Framework**
  Jaewoo Shim[1], Minjae Park[1], Seong-je Cho[1], Minkyu Park[2], and Sangchul Han[2]
  [1]Dankook University, Republic of Korea
  [2]Konkuk University, Republic of Korea

12:00PM-01:30PM	Lunch

01:30PM-02:00PM	Opening Ceremony

02:00PM-03:00PM	Keynote by Han-Chieh Chao (National Dong Hwa University, Taiwan) **Application and Development of Fog computing in 5G**

Session Chair: Prof. Fang-Yie Leu (ThungHai University, Taiwan)

03:00PM-03:30PM	Coffee Break

03:30PM-05:00PM	MobiSec 2018 Session 3 – Bock Chain and Authentication

Session Chair: Dr. Noriki Uchida (Fukuoka Institute of Technology, Japan)

- **Control Channel Networks: A Fast Blockchain-Based Access Control in Peer-to-Peer Networks**
  Siwan Noh, Hynwoo Kim, Sang-Uk Shin, and Kyung-Hyune Rhee
  Pukyong National University, Republic of Korea

- **Consensus Smart Contract Agreement for Cross-OTT-Platform**
  Hsing-Chung Chen
  Asia University, Taiwan

- **A Scoping Review in Defend Against Selfish Mining Attack in Bitcoin**
  Sandi Rahmadika, Bruno Joachim Kweka, Hyunwoo Kim, and Kyung-Hyune Rhee
  Pukyong National University, Republic of Korea

- **User Keystroke Authentication Based On Convolutional Neural Network**
  Mengxin Liu and Jianfeng Guan
  Beijing University of Posts and Telecommunications, China

05:00PM-06:00PM	MobiSec 2018 Short Presentation Session

Session Chairs: Dr. Fang-Yie Leu (ThungHai University, Taiwan)
              Dr. Ilsun You (Soonchunhyang University, Republic of Korea)

- **Towards Traffic-Driven VNF Scaling: A Preliminary Case Study based on Container**
  Guanglei Li, Zhou Huachun, Guanwen Li, and Bohao Feng
  Beijing Jiaotong University, Beijing, China

- **Weighted interest degree collaborative recommendation algorithm based on association rules**
  Jiuzhi Lin[1], Zhaoxia Chang[2], and Jing Zhang[3]
  [1]University of Science and Technology Beijing, China
  [2]Minzu University of China, China
  [3]Beijing Technology and Business University, China

- **Authorized client-side deduplication using CP-ABE**
  Taek-Young Youn[1], Nam-Su Jho[1], Ji-Sun Park[2], Kyung Hyune Rhee[2], and Sang Uk Shin[2]
  [1]Electronics and Telecommunications Research Institute (ETRI), Republic of Korea
  [2]Pukyong National University, Republic of Korea

- **Dynamic Replication for Secure Mobile Caching: A Control Theoretic Approach**
  Joongheon Kim[1], Taek-Young Youn[2], and Ki-Woong Park[3]
  [1]Chung-Ang University, Republic of Korea
  [2]Electronics and Telecommunications Research Institute (ETRI), Republic of Korea
  [3]Sejong University, Republic of Korea

- **Software-defined Unmanned Aerial Vehicles Network**
  Baokang Zhao[1], Jinzhen Bao[2], and Changjiang Fei[1]
  [1]National University of Defense Technology, China
  [2]PLA Academy of Military Science, China

- **Applying Big Data Processing and Machine Learning Methods for Mobile Internet of Things Security Monitoring**
  Igor Kotenko[1,2], Igor Saenko[1,2], and Alexander Branitskiy[1,2]
  [1]Lab. of Computer Security Problems of St. Petersburg Institute for Informatics and Automation, Russia
  [2]St. Petersburg National Research University of Information Technologies, Mechanics and Optics, Russia

- **Secure Communication in Cyber-Physical Systems**
  Dmitry Levshun[1,2], Yannick Chevalier[2,3], Igor Kotenko[1,2], and Andrey Chechulin[1,2]
  [1]St. Petersburg Institute for Informatics and Automation, Russia
  [2] ITMO University, Russia
  [3]Informatics Research Institute of Toulouse, France

- **Tracing Link Flooding Attacks in MobilityFirst Networks**
  Zhaoxu Wang, Huachun Zhou, and Wei Quan
  Beijing Jiaotong University, China

- **Physical Unclonable Functions based on silicon micro-ring resonators for secure signature delegation in Wireless Sensor Networks**
  Borja Bordel Sánchez and Ramón Alcarria
  Universidad Politécnica de Madrid, Spain

- **Hierarchical Threshold Secret Image Sharing Scheme Based on Birkhoff Interpolation and Matrix Projection**
  Zhenhua Tan, Danke Wu1,Hong Li, Tianhan Gao, and Nan Guo
  Northeastern University, China

- **Activation Increment Minimization Strategy to limit bad information diffusion based on SIR Model**
  Danke Wu, Zhenhua Tan, Tianhan Gao, and Nan Guo
  Northeastern University, China

06:30PM-08:30PM	Banquet

Friday, 31st August, 2018

08:10AM-03:00PM	Registration

08:30AM-10:00AM	MobiSec 2018 Session 4 – Vehicular Security

Session Chair: Dr. Hsing-Chung Chen (Asia University, Taiwan)

- **Decentralized Event-Based Vehicular Social Networks and Case Study**
  Nan Guo, Cong Zhao, and Tianhan Gao
  Northeastern University, China

- **A Secure and Efficient System for Ambulance Vehicular Social Network Based on Re-Fragmentation and Swarm**
  Tianhan Gao and Marwan Kadhim Mohammed Al-shammari
  Northeastern University, China

- **Securely Controllable and Trustworthy Remote Erasure on Embedded Computing System for Unmanned Aerial Vehicle**
  Sieun Kim[1], Taek-Young Youn[2], Daesun Choi[3], and Ki-Woong Park[4]
  [1]Sejong University, Republic of Korea
  [2]Electronics and Telecommunications Research Institute, Republic of Korea
  [3]Kongju National University, Kong-ju, Republic of Korea
  [4]Sejong University, Seoul, Republic of Korea

- **Internet of Drones (IoD): Threats, Vulnerability, and Security Perspectives**
  Gaurav Choudhary , Vishal Sharma , Takshi Gupta , Jiyoon Kim, and Ilsun You
  Soonchunhyang University, Republic of Korea

10:00AM-10:30AM	Coffee Break

10:30AM-12:00PM	MobiSec 2018 Session 5 – Mobile Network an IoT Security 2

Session Chair: Dr. Nan Guo (Northeastern University, China)

- **A Lightweight Authentication and Data Encryption Method for IoT Communication**
  Kun-Lin Tsai, Fang-Yie Leu, Shuo-Wen Chang, and Hsiung-Chieh Hsu
  Tunghai University, Taichung, Taiwan

- **Privacy fatigue in the internet of things(IoT) environment**
  Junhyoung Oh, Ukjin Lee, and Kyungho Lee
  Korea University, Republic of Korea

- **Enhanced Trust Based Security for Internet of Things**
  Narendran Rajagopalan[1], C. Mala[2], and Chidanandan V[1]
  [1]National Institute of Technology Puducherry, India
  [2]National Institute of Technology Trichy, India

- **Authorized Wireless Charging System based on Double-Frequency-Hopping for Mobile Devices**
  Yangjae Lee[1], Dongmin Yang[2], Taek-Young Youn[3], Ki-Woong Park[1]
  [1]Sejong University, Republic of Korea
  [2]Chonbuk University, Republic of Korea
  [3]Electronics and Telecommunications Research Institute, Republic of Korea

12:00PM-01:30PM	Lunch

01:30PM-03:00PM	MobiSec 2018 Session 6 – Internet Security and Privacy

Session Chair: Dr. Tianhan Gao (Northeastern University, China)

- **Privacy-Preserving Minimum Spanning Tree Algorithms in Static Semi-honest Model**
  Koteswara Rao Ch and Kunwar Singh
  National Institute of Technology, Tiruchirappalli, India

- **Label-based Security Management Mechanism for Universal Identifier Network**
  Jianfeng Guan, Jinsuo Jia, and Mengxin Liu
  Beijing University of Posts and Telecommunications, China

- **SVM based Traffic Classification for Mitigating HTTP Attack**
  V. Punitha and C. Mala
  National Institute of Technology, Tiruchirappalli, India

- **Detection of Coercive Parsing Attack in XML Requests using Machine Learning Techniques**
  V. Punitha and C. Mala
  National Institute of Technology, Tiruchirappalli, India

03:00PM-03:30PM	Coffee Break

03:30PM-05:00PM	MobiSec 2018 Session 7 – Related Network Technologies

Session Chair: Dr. Kunwar Singh (National Institute of Technology, Tiruchirappalli, India)

- **Performance Analysis of Influence of Carrier Frequency Offset in OFDMA Wireless Communication Systems**
  Chia-Hsin Cheng
  National Formosa University, Taiwan

- **An Optimization of Phi-function for Convex Polygons**
  Narendran Rajagopalan[1], C. Mala[2], and Anit Nobert[1]
  [1]National Institute of Technology Puducherry, India
  [2]National Institute of Technology Trichy, India

- **Using iBeacon Technology with a Back Propagation Neural Network to Positioning Systems**
  Chia-Hsin Cheng, Chia-Yao Hu, Tao-Ping Wang, and Feng-Cheng Wu
  National Formosa University, Taiwan