

# APNNS NEWS



ICONIP 2021 Venue - Bali, Indonesia

# APNNS NEWS

No. 6 (December 2021)

## CONTENTS

<b>1. President's Message .....</b>	<b>1</b>
<b>2. The 12<sup>th</sup> International Cybersecurity Data Mining Competition (CDMC 2021).....</b>	<b>4</b>
<b>3. The 14<sup>th</sup> International Workshop on Artificial Intelligence and Cybersecurity (AICS 2021) 5</b>	
3.1 AICS2021 Program (8 December 2021).....	5
3.2 AICS2021 Keynotes Talk .....	7
<b>4. International Conference on Neural Information Processing (ICONIP) series.....</b>	<b>9</b>
<b>5. ICONIP 2021 Information .....</b>	<b>11</b>
5.1 Overview.....	11
5.2 Organizing Committee.....	12
5.3 History .....	14

# 1. President's Message



**Prof. Seiichi Ozawa, President**

I hope you are all doing well. It is with great regret that the momentum of the COVID-19 pandemic is still not over and our research activities continue to be restricted. The 28th International Conference on Neural Information Processing (ICONIP2021), held from December 8 to December 11, was successfully organized with great success. Originally, it was supposed to be held in Bali, Indonesia, but due to the COVID-19 pandemic, it was forced to be held online again. This is the second consecutive year that ICONIP has been held online, following Bangkok (Thailand). Despite this situation, more than 1000 papers were submitted by researchers from all over the world, confirming ICONIP as a major international conference in the field of neural networks, machine learning, and soft computing.

ICONIP was started in 1994 as the flagship conference of Asia Pacific Neural Network Assembly (APNNA), which was the previous organization of APNNS, and ICONIP was first held in Seoul, Korea in 1994. Then, APNNS was reorganized as an academic organization from APNNA in 2016, throughout APNNA and APNNS era, ICONIP conferences have been held every year mainly within Asia Pacific Rim. In Southeast Asia, ICONIP has been held in Singapore, Thailand, Malaysia, and Cambodia, and this year, Indonesia. It is a great pleasure to hold the 28th ICONIP conference in Indonesia. On the other hand, it was a bit surprise that this is the first ICONIP held in Indonesia because Indonesia is a major country in Asia. Therefore, I was really looking forward to the ICONIP 2021 to be held in Bali. Unfortunately, it was not realized, but I am very grateful to Prof. Teddy Mantoro, the general chair of ICONIP2021, and the organizing committee for their hard work in preparing a virtual system that makes us feel a taste of Bali.

Currently, the APNNS has 572 members (as of December 9, 2021). Most of them are from China, Korea, Australia, India, and Japan; there are not many Indonesian members yet. However, many Indonesian faculty members and researchers who have supported this conference and their students who are under their guidance are participating in this conference. I believe that many of our Indonesian compatriots will join APNNS after this conference. APNNS is a society that connects researchers in brain engineering and brain science research in the Asia Pacific Rim region, and I am very happy to invite Indonesian people to make this circle even larger. Next year, ICONIP2022 will be held in India, and I hope that APNNS can further contribute to the development of brain science and brain engineering in the Asia Pacific Rim region.

It is hoped that next year the COVID-2019 pandemic will be under control and our international collaborative activities will be easier to carry out. For the past two years, the activities of the society have been restricted to online, but I think it is time to discuss our activity policy on how APNNS can contribute to its members, assuming that we can resume our original activities. I will be

discussing and deciding on this activity policy of the society with the following APNNS board of governors and will notice you our new policy in the near future.

Have a happy and healthy Christmas and New Year!

APNNS has a strong leadership provided by the Board of Governors:



**Seiichi Ozawa**  
**President**

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Data Sciences  
Kobe University  
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## 2. The 12<sup>th</sup> International Cybersecurity Data Mining Competition (CDMC 2021)



**Paul Pang, VP Competitions**

<http://www.csmining.org/>

The CDMC2021 is a challenging, multi-month research and practice competition, focusing on the application of knowledge discovery techniques to address cyber security challenges in real-world applications. The competition is open to multi-person teams or individuals worldwide, particularly welcoming university students, undergraduate or postgraduate in the field of data science, network engineering, cyber security, and artificial intelligence.

The competition has attracted a total of 128 participations from 17 countries. According to the performance evaluation, the following participants are awarded the top 3 teams:

### **The First Place Winner**

*Shuai Wang, Peixuan Li, Tianhe Lu, Tianjie Ju, Gongshen Liu  
Shanghai Jiao Tong University, China*

### **The Second Place Winner**

*Marimo NAGAE, Ayano NISHIMURA, Aiko MICHİYAMA, Yurina WADA, Yuri MANABE, Ayaka YAMANE, Yumiko NOSAKA, Runa HARA, Kaho KIDOGUCHI, Mimi OKUMURA, Hana SHIRAI, Yuki MARUNO  
Kyoto Women's University, Japan*

### **The Third Place Winner**

*Raffaele Morganti  
University of Milano-Bicocca, Italy*

### 3. The 14<sup>th</sup> International Workshop on Artificial Intelligence and Cybersecurity (AICS 2021)



**Paul Pang, VP Competitions**

The 14th International Workshop on Artificial Intelligence and Cybersecurity (AICS 2021) will be held as a special event at the 27th International Conference on Neural Information Processing (ICONIP 2021), Bali, Indonesia.

#### 3.1 AICS2021 Program (8 December 2021)

Time	Program	Session Chair
10:30 – 11:15	<b>Keynote 1:</b> <b>Fighting IoT Cyberattacks: Device Discovery, Attack Observation, and Security Notification</b> <i>Prof Katsunari Yoshioka</i> <i>Yokohama National University, Japan</i>	Sye Loong Keoh
<b>Session I</b>		
11:15 – 11:30	<b>JStrack: Enriching Malicious JavaScript Detection Based on AST Graph Analysis and Attention Mechanism</b> <i>Muhammad Fakhur Rozi (NIICT, Japan), Tao Ban (NIICT, Japan), Seiichi Ozawa (Kobe University, Japan), Sangwook Kim (Kobe University, Japan), Takeshi Takahashi (NIICT, Japan), and Dai Inoue (NIICT, Japan)</i>	
11:30 – 11:45	<b>A Segment-Based Layout Aware Model for Information Extraction on Document Images</b> <i>Maizhen Ning, Qiu-Feng Wang, Kaizhu Huang and Xiaowei Huang (Xi'an Jiaotong-Liverpool University, China)</i>	
11:45 – 12:00	<b>FHTC: Few-shot Hierarchical Text Classification in Financial Domain</b> <i>Anqi Wang, Qingcai Chen and Dongfang Li (Harbin Institute of Technology (Shenzhen), China)</i>	
12:00 – 12:15	<b>BREAK</b>	

Session II		
12:15 – 13:00	<b>Keynote 2:</b> <b>Building Security and Privacy Assured Deep Neural Networks</b> <i>Dr. Surya Nepal</i> <i>CSIRO Data61, Australia</i>	Geong Sen Poh
13:00 – 13:15	<b>A Comparative Study of Transformers on Word Sense Disambiguation</b> <i>Avi Chawla (Mastercard), Nidhi Mulay (Mastercard), Vikas Bishnoi (Mastercard), Gaurav Dhama (Mastercard), and Anil Kumar Singh (IIT (BHU) Varanasi, India)</i>	
13:15 – 13:30	<b>Retinal Vessel Segmentation based on Gated Skip-connection Network</b> <i>Huixia Yao, Yun Jiang, Tongtong Cheng and Jing Gao (Northwest Normal University Lanzhou, China)</i>	
13:30 – 14:15	<b>LUNCH</b>	
Session III		
14:15 – 15:00	<b>Invited Talk:</b> <b>Decentralized Learning for Anomaly Detection: Challenges and Opportunities</b> <i>Dr. Tianwei Zhang</i> <i>School of Computer Science and Engineering, Nanyang Technological University, Singapore</i>	Paul Pang
15:00 – 15:15	<b>Question Answering over Knowledge Base Embeddings with Triples Representation Learning</b> <i>Zicheng Zuo (Shandong Jiaotong University, China), Zhenfang Zhu (Shandong Jiaotong University, China), Wenqing Wu (Shandong Jiaotong University, China), Qiang Lu (Shandong Jiaotong University, China), Dianyuan Zhang (Shandong Jiaotong University, China) and Wenling Wang (Ludong University, China)</i>	
15:15 – 15:30	<b>Combining Wikipedia to Identify Prerequisite Relations of Concepts in MOOCs</b> <i>Haoyu Wen, Xinning Zhu, Moyu Zhang, Chunhong Zhang, and Changchuan Yin (Beijing University of Posts and Telecommunications, China)</i>	
15:30 – 15:45	<b>CDMC2021 Winner Presentation:</b> <i>Shuai Wang, Peixuan Li, Tianhe Lu, Tianjie Ju, and Gongshen Liu (Shanghai Jiao Tong University, China)</i>	
15:45 – 16:00	<b>CLOSING</b>	



### 3.2 AICS2021 Keynotes Talk

Title: Building Security and Privacy  
Assured Deep Neural Networks  
Dr. Surya Nepal, CSIRO Data61, Australia



Biography - Dr. Surya Nepal is a Senior Principal Research Scientist at CSIRO Data61. He currently leads the distributed systems security group comprising 30+ research staff and 50+ postgraduate students. His main research focus is on the development and implementation of technologies in the area of cybersecurity and privacy and AI and Cybersecurity. He has more than 250 peer-reviewed publications to his credit. He is a member of the editorial boards of IEEE Transactions on Service Computing, ACM Transactions on Internet Technology, IEEE Transactions on Dependable and Secure Computing, and Frontiers of Big Data- Security Privacy and Trust. He is also currently holding the position of deputy research director at Cybersecurity Cooperative Research Centre (CRC).

Abstract - AI/ML technology has the potential to bring significant benefits to the economy and society. It is a tremendous promise. The technology has been developed, deployed, and adopted in many real-life critical applications to fulfill its promise. It helps us to drive cars, doctors to make a diagnosis, employers to hire people, governments to create policies, make our cyberspace secure and safe, address the skill shortage through automation. However, it also introduces significant risks that need to be managed. For example, Backdoor attacks insert hidden associations or triggers to the deep learning models to override correct inference such as classification and make the system perform maliciously according to the attacker-chosen target while generally behaving in the absence of the trigger. In addition, it has been demonstrated that ML models learn more than necessary from the data and endanger individuals' privacy. Hence, AI/ML systems must have the properties of trustworthy computing, such as security and privacy. This talk first provides a brief overview of security and privacy issues in deep neural networks, then presents recent efforts in building trustworthy deep neural networks, and finally some challenges and opportunities.

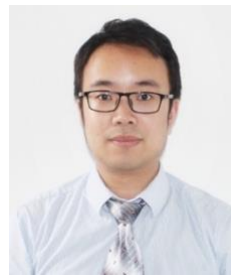
Title: Fighting IoT Cyberattacks: Device Discovery,  
Attack Observation, and Security Notification  
Prof. Katsunari Yoshioka, National Yokohama University, Japan



Biography - Prof Katsunari Yoshioka received the B.E., M.E., and Ph.D. degrees in computer engineering from Yokohama National University, in 2002, 2005, and 2020, respectively. From 2005 to 2007, he was a Researcher with the National Institute of Information and Communications Technology, Japan. He is currently an Associate Professor with the Division of Social Environment and Informatics, Graduate School of Environment and Information Sciences, Yokohama National University. His research interest includes information security, including malware analysis, network monitoring, intrusion detection, and information hiding.

Abstract - IoT cyber security has become one of the most important and challenging topics in recent years. In this talk, new trends in IoT cyber-attacks, malware evolution, and efforts to discover and mitigate insecure and/or compromised devices are explained.

Title: Decentralized Learning for Anomaly Detection:  
Challenges and Opportunities  
Dr. Tianwei Zhang, NTU, Singapore



Biography - Dr. Tianwei Zhang is currently an assistant professor of the School of Computer Science and Engineering, at Nanyang Technological University. He received his Bachelor's degree at Peking University, China, in 2011, and a Ph.D. degree in Electrical Engineering at Princeton University in 2017. His research focuses on computer system security. He is particularly interested in distributed system security, computer architecture security, and machine learning security. He has published more than 40 papers in top-tier AI, security, and system conferences and journals.

Abstract - The rapid development of edge computing and deep learning technologies leads to the area of Artificial Intelligence of Things. Meanwhile, modern edge systems are also facing a variety of security threats when interacting with the complex and dynamic environment. Hence, it has become popular to train and deploy deep learning models on edge devices to perform anomaly detection and protect their runtime execution. The gap between large-scale deep learning models and resource-constrained devices calls for the decentralized learning solution, where multiple participants train the target model collaboratively with high efficiency, generalization, and privacy guarantee. In this talk, I will first present a case study about anomaly detection with decentralized learning in the context of autonomous driving systems. Then, I will discuss some inherent privacy vulnerabilities in distributed learning, and innovative defense solutions to make artificial intelligent systems more trustworthy and efficient.

## 4. International Conference on Neural Information Processing (ICONIP) series



**Kevin Wong, VP Conferences**

The International Conference on Neural Information Processing (ICONIP) is a flagship international conference supported by the Asia Pacific Neural Network Society (APNNS). ICONIP conference series aim to provide a leading international forum for researchers, scientists, and industry professionals who are working in neuroscience, neural networks, deep learning, and related fields to share their new ideas, progresses and achievement, through its regular sessions, special sessions, tutorials, and workshops. The conference is normally held in the month of November or December.

ICONIP 2021 will be held virtually from 8 December 2021 to 11 December 2021, which is organised and hosted by Indonesia (see <https://iconip2021.apnns.org/>). The main proceedings for the ICONIP is normally published in the Lecture Notes in Computer Science book series. The proceedings of ICONIP 2021 consists of a four-volume set, LNCS 13108- 13111, which includes 226 papers selected from 1093 submissions, representing an acceptance rate of 20.86%.

The call for bidding of the ICONIP will normally close before end of November. We have received the bids for running ICONIP 2024 this year and announcement of the successful bidding will be announced and of 2021 or beginning 2022. For any future bidding, you can contact the Vice President (Conference).

From year 2020, APNNS have applied the following financial policy to ICONIP conferences.

1. Conference budget – income & outcome (expenditure)
  - A. Budget Plan: The candidate of general chair for future ICONIPs should prepare a budget plan including the venue, number of expected submitted papers as well as registration fee. He or she must prepare a several budget plan options depending on the expectation of number of submitted papers. If it is necessary to change the original proposal including the venue and registration fee, the host should get an approval from APNNS EXCO.
  - B. Income: The registration fee is collected by APNNS through a registration site that is set up by APNNS. APNNS is responsible to collect ICONIP registration fee using credit card and/or Paypal services.
  - C. Outcome: After the conference, the general chair and financial chair should report all of expense with receipts to APNNS auditors within 3 months after the conference. The VP for finance should check with audit report prepared by APNNS auditors, and then GBCon approve it.

2. Profit sharing
  - A. Profit should be shared by local organizer and APNNS as 50/50 split.
  
3. Insurance and seed money
  - A. The APNNS should provide a seed money. If the host has a surplus, the host for the conference should return the seed money to APNNS. The financial VP should suggest a certain amount of seed money. EXCO can decide it with approval in the GB meeting. If the host has a deficit after paying the society fee, the host should return the seed money after deducting a certain amount of deficit from the seed money. The percentage of the deficit that can be covered will need to be negotiated between the APNNS and ICONIP.
  
4. PC members
  - A. PC members should review a certain number of papers.
  - B. APNNS prepare a list of PC members, and provide to conference PC chairs.
  - C. After the conference, the PC chairs should update the list and report with reviewers' evaluation to VP for conference.
  - D. PC chairs should discuss with APNNS for the acceptance rate.
  - E. PC chairs should take care of all reviewing process including those papers submitted to workshops and special sessions.

## 5. ICONIP 2021 Information



**Teddy Mantoro and Minho Lee, General Chair and Co-Chair of ICONIP 2021**

### 5.1 Overview

The 28th International Conference on Neural Information Processing (ICONIP2021) aims to provide a leading international forum for researchers, scientists, and industry professionals who are working in neuroscience, neural networks, deep learning, and related fields to share their new ideas, progresses and achievement, through its regular sessions, special sessions, tutorials, and workshops.

ICONIP 2021 will be held in online mode during December 8-12, 2021

## 5.2 Organizing Committee

### Advisory Committee

Jonathan Hoyin Chan, Thailand  
Lance Fung, Australia

### General Chair and Co-Chair

Teddy Mantoro, Indonesia  
Minho Lee, South Korea

### Program Co-Chairs

Media Ayu, Indonesia  
Kevin Wong, Australia  
Achmad Nizar, Indonesia

### Finance Co-Chairs

Kurnianingsih, Indonesia  
Kazushi Ikeda, Japan

### Special Sessions Co-Chairs

Sunu Wibirama, Indonesia  
Paul Pang, Australia  
Noor Akhmad Setiawan, Indonesia

### Publicity Co-Chairs

Dwiza Riana, Indonesia  
M. Tanveer, India

### Publication Co-Chairs

Adi Wibowo, Indonesia  
Sung Bae Cho, Korea

### Local Arrangement Co-Chairs

Linawati, Indonesia  
W.G. Ariastina, Indonesia

### Tutorial & Workshop Co-Chairs

Suryono, Indonesia  
Muhammad Agni  
Catur Bhakti, Indonesia

Meyliana, Indonesia  
Frieyadie, Indonesia

### Regional Liaison Committee

Jianke Zhu, China  
Bo Zhang, France  
Sonali Agarwal, Allahabad

### Sponsors:



### **5.3 History**

27th International Conference on Neural Information Processing, Bangkok, Thailand, 2020

26th International Conference on Neural Information Processing, Sydney, Australia, 2019

25th International Conference on Neural Information Processing, Siem Reap, Cambodia, 2018

24th International Conference on Neural Information Processing, Guangzhou, China, 2017

23rd International Conference on Neural Information Processing, Kyoto, Japan, 2016

22nd International Conference on Neural Information Processing, Istanbul, Turkey, 2015

21st International Conference on Neural Information Processing, Kuching, Sarawak, Malaysia, 2014

20th International Conference on Neural Information Processing, Daegu, Korea, 2013

19th International Conference on Neural Information Processing, Doha, Qatar, 2012

18th International Conference on Neural Information Processing, Shanghai, China, 2011

17th International Conference on Neural Information Processing, Sydney, Australia, 2010

16th International Conference on Neural Information Processing, Bangkok, Thailand, 2009

15th International Conference on Neural Information Processing, Auckland, New Zealand, 2008

14th International Conference on Neural Information Processing, Kitakyushu, Japan, 2007

13th International Conference on Neural Information Processing, Hong Kong, 2006

12th International Conference on Neural Information Processing, Taipei, 2005

11th International Conference on Neural Information Processing, Calcutta, India, 2004

10th International Conference on Neural Information Processing, Istanbul, Turkey, 2003

9th International Conference on Neural Information Processing, Singapore, 2002

8th International Conference on Neural Information Processing, Shanghai, China, 2001

7th International Conference on Neural Information Processing, Taejon, Korea, 2000

6th International Conference on Neural Information Processing, Perth, Australia, 1999

5th International Conference on Neural Information Processing, Kitakyushu, Japan, 1998



4th International Conference on Neural Information Processing, Dunedin, New Zealand, 1997

3rd International Conference on Neural Information Processing, Hong Kong, 1996

2nd International Conference on Neural Information Processing, Beijing, China, 1995

1st International Conference on Neural Information Processing, Seoul, Korea, 1994