Preface

WELCOME MESSAGE

Chair of the ICOBAR 2020
June 23-24, 2020
Bina Nusantara University, Jakarta, Indonesia

Rector of Bina Nusantara University, Prof. Harjanto Prabowo
Vice Rector, Prof. Tirta Nugraha Mursitama
Distinguished keynote speakers and presenters of the ICOBAR

On behalf of Bina Nusantara University and the organizing committee of the ICOBAR, I am delighted to have the opportunity to deliver this opening message today. As you are well aware, due to the extraordinary situation produced by COVID-19, we have decided to prepare our conference in a virtual format to best keep you physically safe while still profiting from the stimulating, intellectual developments that we have in store.

To begin, I would like to thank our distinguished keynote speakers and the Archipelagic & Islands States (AIS) as our sponsor. More than that, I also express my heartfelt thanks to the committee, reviewers, and all people who have given their time and assistance to support this event.

As we all know, this is the second conference of Bina Nusantara University, under the flag of ICOBAR. This year, the committee had received around 300 submitted manuscripts from eight countries, namely Indonesia, Japan, United States, United Kingdom, Malaysia, Thailand, Brunei Darussalam, and Czech. Through double-blind peer-review process, the committee carefully selected 181 research papers that will be presented during the conference. We have today and tomorrow to share and exchange ideas and results of our research with other scholars and colleagues. So, let’s make all sessions and discussions, a fruitful one!

After the conference, the committee will prepare full paper proceedings that will be sent further for final review by the IOP EES, the publisher. As the Chair of ICOBAR, I therefore expect that all presenters and authors to give their best efforts to refine their papers for a successful future publication with the IOP EES.

I believe that each of us is already familiar with the term “Society 5.0”. One of the focal issues in Society 5.0 is whether technology would enable mankind in sustaining the earth as our living place. Thus, we focused our attention on Society 5.0 and sustainability issues. With that in mind, the Committee chose the main theme for the 2nd ICOBAR as “Towards Society 5.0: How Inter-disciplinary Research Contributes to Sustainable Smart Society”. The theme has inspired four tracks that we carefully designed for the conference. The tracks are:

- Sustainable infrastructure, industry, architecture, and food technology
• Big data, green computing, and information system
• Sustainable finance and environmental organization
• Applied social sciences to support sustainable society

The committee wishes to receive solid scientific papers which discussing current trends and developments that emphasize the efforts made by academic institutions and society to live in harmony with the environment. During the conference, we also expect to discuss whether science and humans are able to create green innovations and technology that could significantly contribute to solve issues in many areas, such as infrastructure, natural disasters, health, mobility, economic and social development, as well as public policy to sustain the quality of human life and the ecosystem in the 21st century.

I do hope that through the discussion and knowledge sharing sessions, the conference will bring positive contribution and impact to the academic society, policy makers and key stakeholders in our society.

Before coming to a close of this remark, I would also like to remind you and especially our presenters and hosts to strictly stick to our time schedule and not to let any session over-run.

To conclude, I wish all of us a great two-day conference with Binus University. Once again, thank you for your great contribution and participation to the success of this event.

See you again next year!

Thank you very much.

Jakarta, 23 June 2020
Dr. Eng. Nico Surantha
General Chair of the ICOBAR 2020

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• Dr. Nanthakumar Loganathan, Universiti Teknologi Malaysia

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| Utari Novella, PhD                 | Bina Nusantara University, Indonesia                  |
KEYNOTE SPEAKERS

KEYNOTE SPEAKER I
Prof Dr. Trio Adiono, Professor in Institute Teknologi, Bandung
Prof. Dr. Trio Adiono received Bachelor and Master Degree from Electrical Engineering, Institut Teknologi Bandung, Bandung – Indonesia and Doctoral Degree from Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo – Japan. Now, he is a full Professor in Electrical Engineering, Institut Teknologi Bandung, Bandung – Indonesia. His research interests are on Wireless Communication DSP, FPGA, and Smart Card. He is an author of more than 200 publications in journals and conferences. Prof. Dr. Trio Adiono is a member of IEEE.

Future Trend in Edge Computing AI Processor

Artificial Intelligence becomes a key technology in Society 5.0. The use of AI is currently exponentially increasing with a variety of applications in health, self driving cars, autonomous robotics, speech recognition, computer vision and so on. The AI processing can be done in the Cloud or in the Edge. The processing in the edge, such as in IoT device, smartphone, drone, robot, card, and etc., face a great challenge such as limited power consumption, fast response, reliable and small device as well as low cost for mass deployment. Several design technique acmethodologies to improve AI processor performances will be presented in this presentation. The design technique includes algorithm and hardware level optimization. The implementation issue and design trade of will also be discussed. It covers state of the art of AI processors development and trends.

KEYNOTE SPEAKER II
Jun Hirabayashi, Director at Qunie Corporation, Japan

Jun Hirabayashi is a Director of Business Development Support in Developing Countries in Qunie Corporation. He graduated from the University of Tokyo. He was previously working as senior manager in Accenture Japan for 17 years.

How does Japan prepare digital technology for society 5.0?

Society 5.0 is an initiative of Japan to create a new social contract and economic model by fully incorporating the technological innovations of the fourth industrial revolution. Big data, Artificial Intelligence (AI), and Internet-of-Things (IoT) are the milestones for entering Society 5.0 within which innovation, intelligence, and technology will provide solutions for better human life and the ecosystem. In this keynote speech, Mr. Hirabayashi will discuss about concrete solutions provided by NTT group or other advanced companies in Japan to prepare for society 5.0.
KEYNOTE SPEAKER III
Dr. Nanthakumar Loganathan, Assoc. Professor in Universiti Teknologi Malaysia

Dr. Nanthakumar Loganathan is an Associate Professor at Azman Hashim International Business School, Universiti Teknologi Malaysia (UTM). His holding PhD. On Development Economics and his current research interests mainly focus on Applied Time Series Econometrics related with Development Economics, Tourism Economics, Environmental and Resource Economics. He has published numbers of scholarly journal articles and appointed as invited reviewer for numbers scholarly journals worldwide.

Trade and Economic Sustainability of the Belt and Road Initiative (BRI) on ASEAN Maritime Route Countries with China

Artificial Intelligence becomes a key technology in Society 5.0. The use of AI is currently exponentially increasing with a variety of applications in health, self driving cars, autonomous robotics, speech recognition, computer vision and so on. The AI processing can be done in the Cloud or in the Edge. The processing in the edge, such as in IoT device, smartphone, drone, robot, card, and etc., face a great challenge such as limited power consumption, fast response, reliable and small device as well as low cost for mass deployment. Several design technique and methodologies to improve AI processor performances will be presented in this presentation. The design technique includes algorithm and hardware level optimization. The implementation issue and design trade of will also be discussed. It covers state of the art of AI processors development and trends.
Virtual Disclaimer

The ICOBAR 2020 held as a full virtual conference on June 23-24, 2020. The conference, hosted for 2 days, was divided into three parallel sessions. Each presenter was given around 15 minutes to present their research article. All presentations and sessions were held online through Zoom meeting platform. The online platform enabled all speakers and participants to join the event from their place.

Regarding the COVID-19 pandemic, Bina Nusantara University concerned about the pandemic and implications which have affected many regions, including Indonesia. We have, therefore, carefully decided to change the concept of the conference into a full virtual event due to several reasons. First, the COVID-19 infected cases were kept increasing since March 2020. The infected cases reached around 26,000 and 39,000 cases in the beginning and mid of June 2020. Most of the cities in Indonesia were under strict social distancing status and quarantine which prohibit and limit face-to-face contact and public events or gathering. Under this strict policy and measures, the Organiser must take alternative option by changing the mode of the Conference into a full online platform. As the pandemic still hit the cities, the Organiser decided to host a full ICOBAR online conference. Figures 1 and 2 show the development of COVID-19 cases in Indonesia around the conference dates (June).

**Figure 1 COVID-19 Data of Indonesia**

![COVID-19 Data of Indonesia](https://covid19.go.id/peta-sebaran)

Source: [https://covid19.go.id/peta-sebaran](https://covid19.go.id/peta-sebaran)

**FIGURE 2 COVID-19 DATA OF INDONESIA (JUNE 22)**
However, thanks to BINUS University strong IT infrastructure support, we are confident that the entire online event will go smoothly without major technical problems or disruption. Through the prepared online platform, our invited guest speakers and authors spoke via the online forum and presented their papers at the conference. Moreover, ICOBAR was held as planned to prevent conflicting of conferences/events between 2020 and early 2021. Also, with the online conference, Binus University has chance to promote and continue collaborative research and publishing activities through remote working or work from home condition. With committed guest speakers and committee, the Conference was successfully held as planned on June 23-24. Figures 1-18 in the next pages present some of the photos taken from the plenary and breakout sessions of the ICOBAR 2020.

**Additional information of the ICOBAR 2020 as follows:**

- Date of the conference: June 23-24, 2020.
- Conference model: Virtual conference
- Platform: Zoom meeting (host up to 1,000 participants)
- Plenary sessions: 2 plenary sessions (June 23-24)
- Breakout session: 3 parallel sessions each for June 23 and 24
- Presenter: allotted with 15 minutes presentation time
- Q&A sessions: 10-15 minutes after each breakout session.
- Location: Indonesia (Jakarta)
- Number of participants: 278 participants

Source: [https://covid19.go.id/peta-sebaran](https://covid19.go.id/peta-sebaran)
Videos of the conference links:

1. **Program Book:**
   - https://research.binus.ac.id/wp-content/uploads/2020/06/ICOBAR-2020_PROGRAM-BOOK_R3.pdf

2. **Guest Speakers Remarks Sessions:**
   - Opening Ceremony: https://youtu.be/6pdcwC0Jng8
   - Keynote Speaker I: https://youtu.be/Dq676QcjI0o
   - Keynote Speaker II: https://youtu.be/4aEzaGQER9g
   - Keynote Speaker III: https://youtu.be/HrM8mypNZCw
   - Keynote Speaker IV: https://youtu.be/BE-h6FgJYTo

3. **Sample of Breakout Session**
   - https://youtu.be/ritrdOrc4lM

Event Rundown:

| Time | Session |
|------|---------|
| 08:00 am – 08.30 am | Registration |
| 08:30 am – 08:45 am | Opening |
| 08:45 am – 09:00 am | Remarks |
| 09:00 am – 09:20 am | Welcome Remarks |
| 09:20 am – 10:20 am | “Future Trend in Edge Computing AI Processor”
  | Prof Dr. Trio Adiono
  | (Professor in Institute Teknologi, Bandung) |
| 10:20 am – 11:20 am | “How does Japan prepare digital technology for society 5.0?”
  | Jun Hirabayashi
  | (Director at Qunie Corporation, Japan) |
| 11.20 am – 11.30 am | Guidance to Parallel Session |

**Session 1**
(11.30 AM – 12.40 PM)

**Session 2**
(13.20 PM – 15.00 PM)
| Time            | Session 1                              | Session 2                          |
|-----------------|----------------------------------------|------------------------------------|
| 08:00 am – 08:45 am | Registration                          |                                    |
| 08:45 am – 09:00 am | Opening                               |                                    |
| 09:00 am – 10:00 am | "Trade and Economic Sustainability of the Belt and Road Initiative (BRI) on ASEAN Maritime Route Countries with China" | Dr. Nanthakumar Loganathan (Associate Professor in Universiti Teknologi Malaysia, Malaysia) |
| 10:00 am – 11:00 am | "Perspectives from an Atlantic nation: Climate Change Mitigation and Industry 4.0 in Ireland" | H.E. Olivia Leslie (Ambassador of Ireland to Indonesia) |
| 11:00 am – 11:05 am | AIS Forum – Video Playback             |                                    |
| 11:05 am – 11:15 am | Guidance to Parallel Session           |                                    |

**SESSION 3**
(15.30 PM – 17.10 PM)

**SESSION 4**
(11.15 AM – 12.25 PM)

**SESSION 5**
(13.30 PM – 15.10 PM)

**SESSION 6**
(15.30 PM – 17.10 PM)
Photos of the ICOBAR 2020:

FIGURE 1

POSTER OF THE CONFERENCE
FIGURE 2
GROUP PHOTO OF THE OPENING CEREMONY

FIGURE 3
GROUP PHOTO OF THE OPENING CEREMONY
FIGURE 4

REMARKS BY THE GENERAL CHAIR BINUS JOINT INTERNATIONAL CONFERENCE (BJIC) 2020

FIGURE 5

OPENING REMARKS BY CHAIRPERSON

FIGURE 6
KEYNOTE SPEAKER (JUNE 23)

**FIGURE 7**

KEYNOTE SPEAKER (JUNE 24)
FIGURE 8
KEYNOTE SPEAKER (JUNE 24)

Trade and Economic Sustainability of the Belt and Road Initiative on ASEAN Maritime Route Countries with China

Nurhidayah Tun Mohd Hajar (PhD)
Arman Adzim international Business School
Universiti Teknologi Malaysia

Figure 9
Keynote Speaker (June 24)
FIGURE 10
LINKS TO ACCESS THE SESSIONS

DAY 2, 24 June 2020
SESSION 2
11:30 am – 1:40 pm

Link to parallel sessions:
1. ICOBAR_A  : https://bit.ly/ICOBAR_A
2. ICOBAR_B  : https://bit.ly/ICOBAR_B
3. ICOBAR_C  : https://bit.ly/ICOBAR_C
4. ICOBAR_D  : https://bit.ly/ICOBAR_D
5. ICOBAR_E  : https://bit.ly/ICOBAR_E

FIGURE 1
BREAKOUT SESSION
FIGURE 36
BREAKOUT SESSION

FIGURE 17
BREAKOUT SESSION
FIGURE 18
BEST PAPER AWARD ANNOUNCEMENT

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