Prosiding Seminar Internasional (KUM C No. B1)

| | |
|---|---|
| Judul Artikel | The use of Microframework for Portable and Distributed ePortfolio Development |
| Penulis | **Irwan Alnarus Kautsar**, Riyanarto Sarno |
| Nama seminar/ konferensi/ simposium (lengkap dan singkatannya jika ada) | 2019 IEEE International Conference on Engineering, Technology and Education, 2019 (TALE2019) |
| Penyelenggara seminar/ konferensi/ simposium | The Institute of Electrical and Electronics Engineers (IEEE) |
| Waktu Tanggal Pelaksanaan seminar/konferensi/simposium | 10-13 Desember 2019 |
| ISBN/ISSN | 978-1-7281-2665-4 |
| URL Dokumen | DOI: https://doi.org/10.1109/TALE48000.2019.9225965<br><br>IEEE Xplore: https://ieeexplore.ieee.org/document/9225965<br><br>Repository: http://eprints.umsida.ac.id/10471/1/CB1-PaperOnly.pdf |
| URL Peer Review | http://eprints.umsida.ac.id/10471/ |
| URL Dokumen Cek Similarity/Originality (Wajib) | http://eprints.umsida.ac.id/10471/2/CB1-CekSimilarity.pdf |
| Keterangan (bisa diisi dengan link index Prosiding) | Terindeks di Scopus: https://www.scopus.com/authid/detail.uri?authorId=56117891100<br><br>Terindeks di IEEE Xplore: https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=9220968 |
| Tanggal/Waktu | 13 Desember 2019/Ganjil 2019-2020 |
| Satuan | 1 Artikel |
| Volume Kegiatan | 1 Kegiatan |
| Angka Kredit (nilai rata2 dari 2 orang peer review) | |

**CONFERENCE**
BOOK

# IEEE TALE 2019

## International Conference on Teaching, Assessment and Learning for Engineering

Royal Ambarrukmo Hotel
10-13 December 2019, Yogyakarta - Indonesia

Sponsor:

IEEE INDONESIA SECTION

IEEE Education Society

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IEEE TALE 2019

International Conference on Teaching, Assessment and Learning for Engineering

# CONFERENCE PROGRAM

**Royal Ambarrukmo Hotel**
**8-11 April 2019, Yogyakarta - Indonesia**

**www.tale2019.org**

# Welcome Message from the General Chairs

**Dr Ford Lumban Gaol**
**Bina Nusantara University, Indonesia**

**Dr. Ayu Purwarianti**
**Bandung Institute of Technology, Indoneaia**

Greetings!

It is our great pleasure and honor to welcome you to IEEE TALE 2019 and also to our beautiful Yogyakarta, which is capital of Java Kingdom, home to the Borobudur Temple--one of the Seven Wonders of the World.

In this event we will have the opportunities to exchange knowledge and information on latest researches and strengthening relationships amongs us, while enjoying the relaxing yet entertaining environment of Yogyakarta.

TALE is the IEEE Education Society's flagship Asia-Pacific (IEEE Region 10) conference, catering to researchers and practitioners with an interest in science, technology, engineering and mathematics (STEM) education – with a particular emphasis on electrical and electronic engineering, telecommunications, computer engineering, computer science and allied disciplines – as well as those interested in the innovative use of digital technologies for learning, teaching and assessment in any discipline.

The TALE series was first established in 2012 to complement the IEEE Education Society's other, very popular Frontiers in Education and EDUCON conferences, which serve North America (IEEE Regions 1-7) and Europe, the Middle East and Africa (IEEE Region 8), respectively. Following highly successful conferences in Hong Kong (2012 and 2017); Bali, Indonesia (2013); Wellington, New Zealand (2014); Zhuhai, China (2015); Bangkok, Thailand (2016), and Wollongong, Australia (2018).

In this 2019 IEEE TALE, the event is organized by IEEE Education Society, IEEE Indonesia Section, and Doctor of Computer Science Program and School of Information System Bina Nusantara University as Co-Organizer.

In IEEE TALE 2019, we are honoured to have three keynote speakers. Thanks to Prof. Dr. Seiichi Kawata, Prof Dr. Minjuan Wang and Prof Dr Ferry Heriadi to deliver their keynote speech in IEEE TALE 2019.

Thank you very much to Distinguished Panel Members for the Special Track on XR & Immersive Learning Environments: Minjuan Wang, Ekaterina Prasolova-Førland, and Jonathon Richter. Our appreciation also to the Special Track on Big Data, Analytics & Machine Learning in Education: Vitomir Kovanovic, Chi-Un Lei, and Hiroaki Ogata.

We would like to thanks to all of Workshop facilitators : Dr. Taku Jiromaru (President Director of OME Inc. & Conference Service Inc. and Faculty Member of Kurume University), Prof. Dr Ekaterina Prasolova-Førland (Norwegian University of Science and Technology (NTNU)), Dr. Lisa B. Bosman (Purdue University (West Lafayette, IN, USA), Ms. Crystal Jing LUO, (The University of Hong Kong (HKU)) and Mr. Donn Emmanuel GONDA (The Hong Kong University of Science and Technology), Chathura K. Sooriya-Arachchi (Department of Computer Science and Engineering, Institute of Information Technology, Colombo, Sri Lanka), Fariz Alemuda (PT Telekomunikasi Indonesia), Natalia Filimonova (Professor of Economics and the Head of Management and Marketing Department at Vladimir State University (Russia)), Prof. Tokuro Matsuo, Ph.D (Graduate School of Industrial Technology, Advanced Institute of Industrial Technology)

Although several of you might have visited Yogyakarta before and have left some impressions, Yogyakarta will still become an unexhaustible place of attraction, the peaceful romantic environment, the religious ceremonies kept for ages, the fascinating dances, and the friendly people.
We hope all participants will have valuable and also enjoyable experience during this event. Looking forward to see you all in Yogyakarta.

Yours sincerely,

General Chairs,

Dr Ford Lumban Gaol
Bina Nusantara University, Indonesia

Dr. Ayu Purwarianti
Bandung Institute of Technology, Indoneaia

# Welcome Message from the Technical Program Chairs

**Spits Warnars Harco Leslie Hendric**
**Binus University, Indonesia**

**Hiroyuki Mitsuhara**
**Tokushima University, Japan**

**Yoshiko Goda**
**Kumamoto University, Japan**

**Fonny Dameaty Hutagalung**
**University of Malaya, Malaysia**

Dear all researchers around the world,

Thanks to join with the IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE) 2019, which is run in Yogyakarta, Indonesia from 10-13 December 2019. This years tracks include core tracks such as:

1. Engineering Education
2. Computing & IT Education
3. Science, Technology, Engineering and Mathematics (STEM) Education (K-12)
4. Online and Technology-Enhanced Learning
5. Workplace, Community & Informal Learning
6. Entrepreneurship and Startup in Education and Training.

Including Special Tracks such as :

1. XR & Immersive Learning Environments. Organized in conjunction with the Immersive Learning Research Network (iLRN),
2. Big Data, Analytics & Machine Learning in Education,
3. Organized in conjunction with the Society for Learning Analytics Research (SoLAR)
4. The Advancement of Learning Technologies
5. Games and Creativity in Education and Training.

We had 501 submitted papers and 187 papers were accepted with acceptance rate 37% and the papers came from 31 different countries from 5 continents such as: Singapore, Indonesia, Philippines, Hongkong, Malaysia, China, Taiwan, Thailand, Japan, Bangladesh, India, Pakistan,

Qatar, United Arab Emirates, USA, Portugal, Mexico, Fiji, Peru, United Kingdom, Ireland, Finland, Iceland, Germany, France, Italy, Greece, New Zealand, Australia, South Africa, and Namibia.

The paper was organized with EDAS system and had been checked with similarity tool iThenticate and have similarity score under 20%. Moreover, in quality paper checking we applied non subjected to the level 3 IEEE checking plagiarism where the paragraph in the paper did not copy and paste from other paragraphs including self plagiarism. Last but not least, we thank all to who attend in this conference, and we do apologize for any inconvenience either before or after this conference, particularly for authors when they submitted and waiting for the result review's papers and we are waiting for the correction of your accepted papers. Having a happy conference day !

# Welcome Message from the IEEE Education Society President

**Russ Meier**
**IEEE Education Society President**

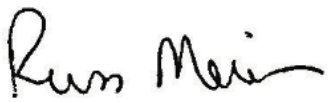
Welcome to Yogyakarta and the 2020 IEEE Teaching, Assessment, and Learning in Engineering Conference. Sponsored by the IEEE Education Society and the IEEE Indonesia Section, and hosted by BINUS University, the conference provides four days of keynotes speakers, industrial speakers, paper sessions, networking events, and an optional final day of sightseeing in Indonesia. Participants from all over the world will interact with each other through this technical program and the planned social events.

This year, I will not be able to join you in Asia for TALE. However, I have been a participant in TALE many times, and I have also been to many universities in the Asia-Pacific region. I have met dedicated engineering educators engaged in ensuring their students achieve the highest potential. These educators study learning science, learning engineering, distance and hybrid learning, mobile learning technologies, innovation in the classroom, and collaborative research. I know that this year's TALE participants continue that dedication to improving the way we educate the next generation of engineers and computer scientists. I extend my warmest regards to all of you and I truly hope you have an outstanding event. The technical program chairs have worked with authors and the conference theme to create an engaging technical program. I thank them and the rest of the conference committee for working to ensure all participants gain insight and new ideas from this important continuing education event.

The support of the conference academic and corporate sponsors helps provide high-quality keynote speakers, meals, and social events. Academic corporate sponsors this year are the Intitut Teknologi Bandung, RISTEKDIKTI, NUNI, Telkom Indonesia, IBM, and Microsoft. I thank them for their support of TALE and helping to provide a dynamic learning environment for the conference participants.

Our academic and industrial keynote speakers this year are truly outstanding. You will not want to miss any of these presentations. I extend my thanks to all of them for contributing their time and talent to the technical program.

Finally, thank you to all the participants of TALE. You are professionals working every day to improve the quality of education around the world. Your work is inspiring to me, and I am happy you have joined the TALE community in Yogyakarta. Enjoy the conference.



Russ Meier, IEEE Education Society President 2019, 2020

# Welcome Message from the Chair of IEEE Indonesia Section

**Dr. Eng. Wisnu Jatmiko**
**Chair of IEEE Indonesia Section**

Dear Distinguished Guests, Colleagues, Researchers, Professionals, ladies, and gentlemen, Good morning. I would like to deliver a prosperous, warm, and spirited greeting.

On behalf of the IEEE Indonesia Section, we would like to extend our warmest welcome to all keynote speakers, presenters, and participants to IEEE TALE 2019. It is an honor of the IEEE TALE 2019 held in Indonesia. TALE is the IEEE Education Society's flagship conference in interests of Science, Technology, Engineering, and Mathematics (STEM) Education.

In a broader view, the core purpose of IEEE is to foster technological innovation and excellence for the benefit of humanity, likewise in digital technology education. We believe that this conference will bring researchers, academicians, scientists, students, engineers, and practitioners together to participate and present their latest research findings, developments and applications related to the various aspects of the current state of digital technology education.

This conference has been a precious moment to meet representatives convening from all over the world to start building the future of IEEE with a great passion. Through this opportunity, we would like to express our appreciation to the IEEE Education Society, which acts as the Organizing Committee of this conference. They have committed their time and energy to manage and ensure this event run smoothly.

Finally, we do hope all of you will have an enjoyable and valuable experience during this event. You may share your best knowledge in your area of research and professional activities. And also, we believe that together, we can encourage research to advance sustainable technologies for a better human life.
Thank you.

Yogyakarta, 10 December 2019
Chair of IEEE Indonesia Section

Wisnu Jatmiko

# Keynote Speakers

## 1. Dr. Seiichi Kawata

### (President, Advanced Institute of Industrial Technology, Japan)

**Title:**
**Professional graduate school system in Japan and some experiences in AIIT**

**Abstract:**
Professional graduate school system was established in 2003 by enacting the Japanese School Education Law, Article 99 paragraph 2. The description of this law is that a professional graduate school "is a graduate school that offers both courses and research on the theories and applied studies of a given discipline and that seeks to train students to acquire profound knowledge and excellent expertise, which they are required to have when pursuing work that demands a high degree of expertise".

After enacting this law, 119 Japanese universities run 169 programs in the fields of teacher education, law school, business school, management of technology, accountancy, public policy, public health, psychology, nuclear professional, information technology, innovation for design and engineering, etc.

In this talk, we would like to explain why so many professional graduate schools have started in Japan and what kinds of engineering professional school are run in Japan and how they teach to educate high level professional in such kinds of graduate schools.

Then we would like to show some experiences in Advanced Institute of Technology (AIIT) in Japan. There from 22 years old student up to 75 years old student and from the new company employee or just after the graduate students and also manager class industry person or president of their own company come together and learn new technology. It is very unique challenge of professional engineering education and we could show that our curriculum includes not only engineering disciplines but also design school disciplines, management, finance and ethics.

**Biography:**
Prof. Seiichi Kawata is a President of Advanced Institute of Industrial Technology, Tokyo Metropolitan University Public University Corporation. He is also a Vice Chairperson of the Board of Trustees of Tokyo Metropolitan University Public University Corporation. He was a Research Associate at Osaka University during 1982-1986. He was a Research Associate at Tokyo Metropolitan University during 1986-1990. He was an Associate Professor at Tokyo Metropolitan University during 1990-2000. He was a Professor at Tokyo Metropolitan University during 2000-2006. He was a Dean and Professor at Advanced Institute of Industrial Technology during 2006-2016.

Prof. Seiichi Kawata is SICE (The Society of Instrument and Control Engineers, Japan) Fellow, He is a Chairperson of APEN (Asia Professional Education Network). He is a member of IEEE, JSME (The Japan Society of Mechanical Engineers), SICE (The Society of Instrument and Control Engineers, Japan) and JSAI (The Japanese Society for Artificial Intelligence).

Prof. Seiichi Kawata published many papers in the field of Control engineering application for the industrial problem, Soft computing application for the manufacturing systems optimization, Development of the integrated simulator of discrete event systems and continuous systems and Service engineering. His research interest includes Industrial control systems design, Optimization of manufacturing systems, Machine Learning, Discrete/ continuous hybrid systems modeling and simulation, and Service Engineering.

# 2. Dr. Minjuan Wang

## (Professor of Learning Design and Technology, San Diego State University (USA); Executive Board Member, the Immersive Learning Research Network)

**Title:**
**Trends and Challenges in Higher Education: Entrepreneurship and the Evolution of Learning**

**Abstract:**

Dr. Wang will discuss the roots of American Higher Education and then proceed to address some of the fundamental challenges Higher Education currently faces. Some of these challenges have the very real possibility of being transformative in nature and forebode major changes in the current Higher Education system. Whereas many around the world believe that Higher Education in America continues to enjoy preeminent world status, maintaining that status is challenged internally by changing demographics, and socio-cultural and economic changes taking place in the United States.

In addition, Dr. Wang will review the evolution of learning, from classroom to E-learning, from online to mobile learning, and to the recently emerged XR (Cross-Reality) and immersive learning. Her presentation will focus on trends and issues related to XR and immersive learning, including the needs for global collaboration and design frameworks that can guide XR's implementation in various settings of education.

## Biography:

Dr. Minjuan Wang is Professor of Learning Design and Technology at San Diego State University (SDSU), and was a distinguished visiting professor of Shanghai International Studies University. She also worked as a project manager for the Chancellor's Office of California State University, where she assisted in forming two IEEE-sponsored editorial boards for the MERLOT project.

In her 19 years at SDSU, she teaches Methods of Inquiry, Designing and Developing Learning for the Global Audience, Mobile Learning and AR Design, and Technologies for Course Delivery. Her research specialties are multidisciplinary, focusing on the X-Reality and Immersive Learning, sociocultural aspects of online learning, mobile learning, Augmented Reality, and intelligent environments. She served as the Chief Editor for the EAI Transactions on E-Learning, and was a guest editor to two premiere journals, Virtual Reality and Interactive Learning Environments. In addition, she serves on editorial boards for four other education technology journals.

As a winner of several research awards and international grants, Minjuan is recognized as one of the high impact authors in blended and mobile learning. She has more than 100 peer-reviewed articles published in indexed journals and conference proceedings, including Educational Technology Research and Development, IEEE Transactions on Education, and British Journal of Educational Technology. She was a keynote and invited speaker to nearly 30 international conferences and also participated in the organization of numerous conferences.

# 3. Henry Feriadi, Ph.D

## (Rector of Duta Wacana Christian University)

**Title:**
**Contextualizing Service Learning Program for Experiential Education in Indonesian Universities**


**Abstract:**
Hundreds universities as part of higher education institutions in Indonesia, are challenged and expected to provide excellent quality education and research based on the current advancement of science and technology. The effort of Indonesian universities in achieving this noble purpose is even harder, complex and very challenging because the universities are also expected to prepare their students to master or acquire professional skills to meet the demand of present and future work place and to contibute in solving socio-economic problems in Indonesia. The adoption of the Whole Person Education (WPE) approach is considered more relevant and suitable for higher education in Indonesia. The concept of WPE believe that holistic education should integrate intellectual, physical and spiritual dimension to make sure that the learning process in science and technology are used to transform learner to be a better person and the wholeness of the creation. Service Learning program is introduced and specifically discussed as an alternative way to bring student into experiental education in Indonesian universities. Service Learning can be defined as "An educational approach that combines learning objectives with community service in order to provide a pragmatic, progressive learning experience while meeting societal needs ". Some experiences and lesson learned from the implementation of the service learning programs at Universitas Kristen Duta Wacana are presented. The further ideas and issues of the integration of experiental learning and digital learning platform in the future are discussed.


**Biography:**

## EDUCATIONAL BACKGROUND:

| | |
|---|---|
| 1987 – 1992 | School of Architecture – Faculty of Engineering - Ir (BArch) Parahyangan Catholic University, Bandung |

| | |
|---|---|
| 1998 – 2000 | Master of Science (MSc) in Building Science School of Design and Environment National University of Singapore |
| 2000 – 2003 | Doctor of Philosophy (PhD) in Building Science School of Design and Environment National University of Singapore |

## PROFESSIONAL BACKGROUND:

### ACADEMIC POSITION:

| | |
|---|---|
| 1992 – present | Senior Lecturer and Researcher, Department of Architecture, Faculty of Architecture and Design Universitas Kristen Duta Wacana (UKDW), Yogyakarta |
| 2003 – 2004 | Vice Dean, for Academic Affairs, Faculty of Engineering |
| 2004 – 2010 | Dean, Faculty of Engineering |
| 2010 – 2014 | Vice Rector, for Partnership and Institutional Development |
| 2014 – present | Rector |
| 1992 – present | Professional Registered Architect for the residential housing, schools, campuses, churches and commercial projects |

### SOCIAL WORKS:

| | |
|---|---|
| 2004 – present | Director, PT. Suara Pelita Nusantara (Petra radio FM 105,7) |
| 2004 – present | Member, National Board of Trustee, Habitat for Humanity Indonesia |
| 2004 – 2008 | Chairman, Habitat for Humanity Indonesia – Jogjakarta |

### SCHOLARSHIPS / AWARDS:

| | |
|---|---|
| 1993 | IATSS (International Association of Traffic and Safety Sciences) Forum – Suzuka Japan, sponsored by HONDA foundation |
| 1998 – 2000 | ASEAN Postgraduate Scholarship for MSc program in NUS |
| 2000 – 2003 | Research Scholarship – President Graduate Fellowship for PhD program in NUS |

# Invited Speakers

## 1. Dr.Taku Jiromaru

### (President Director of OME Inc. & Conference Service Inc. and Faculty Member of Kurume University)

**Title:**
**University as a Supply Chain in Japan.**

**Abstract:**
We can take much information if we consider university as the last part of the supply chain in education. This talk will cover my communication experience of the following person; high school students, university students, parents of the students, staff of universities, professors and the person in charge of employment in company. I hope it will be an opportunity to think how your affiliation functions as a supply chain.

**Biography:**
Dr. Taku Jiromaru is the president of two companies and a part-time lecturer of Kurume University. He graduated from Kyushu Institute of Technology in 2001 and worked for a general company for three years. In 2006, he established OME Inc., whose main business is a private teacher, and assumed the position of president. In 2011, he entered the doctoral program at Yamagata University, Graduate School of Science and Engineering and he established Conference Service Inc., whose main business is the support and management of academic conferences. In 2014, he took the degree of doctorate. Main research area is educational technology. He has started teaching basic mathematics and career education at Kurume University on same year.

OME Inc. is the company that dispatch of private teacher to students who want some special supports. Recently, the customer going abroad to study is increasing. The private teachers teach the customer while they return to Japan. A part of result is as follows; University of Washington, University of California, Irvine, Boston University, Kyushu University, Meiji University, Hyogo College of Medicine, and more.

Conference Service Inc. is a Professional Congress Organizer Company founded in 2011. It can support all Meeting, Incentive tour, Conference and Exhibition; especially it is working on medium/small scale Conferences. A part of past result is as follows; 4th CCPS Global Summit on Process Safety, The Seventh International Conference on Post-Quantum Cryptography, Japanese Society for Social Psychiatry 35th Annual Conference, and more.

Dr. Taku Jiromaru is a member of The Japan Association for Research on Testing, The Japan Association for Developmental Education and Japan Association for Research into IB Education. Also he is a board member of International ICT Application Research Society.

# 2. Prof. Dr Ekaterina Prasolova-Førland

## (Norwegian University of Science and Technology (NTNU))

**Title:**
**Immersive Technologies for learning and training: a cross-disciplinary approach.**

**Abstract:**
Immersive technologies, as an umbrella term for virtual, augmented reality and mixed reality (VR/AR/MR), have recently had an explosive development, opening broad opportunities in the context of education and training. As learning environments, these technologies afford immersive, adaptive and explorative learning spaces, well suited for developing high-impact pedagogies. A successful adoption of these technologies for educational purposes requires not only affordable and high-quality hardware, but also solid pedagogical methodology and cross-disciplinary collaboration between different stakeholders, subject matter experts, educators, learners and developers. This talk provides an overview of past and on-going projects at the Innovative Immersive Technologies for Learning group (IMTEL) and lab at the Norwegian University of Science and Technology, focusing on development of educational immersive applications in cross-disciplinary teams in the fields of STEM, engineering, aquaculture, geography, medicine, history, operational culture and career guidance.

**Biography:**
Ekaterina Prasolova-Førland is full Professor at the Department of Education and Lifelong

Learning at the Norwegian University of Science and Technology (NTNU). Ekaterina has been working with educational virtual worlds and immersive technologies since 2002, with over 100 publications in the field. She has been involved in developing educational virtual reality simulations for a wide range of stakeholders, from aquaculture industry to the Norwegian Armed Forces. Ekaterina has founded and is leading Innovative Immersive Technologies for Learning (IMTEL) research group and VR lab at NTNU. She is Ambassador for Women in Immersive Tech, board member of XR Norway and member of several international expert panels.

Prof. Prasolova-Førland frequently gives public speeches and interviews on immersive technologies for learning and training. She is currently leading the development of innovative VR/AR solutions for the Norwegian Labour and Welfare Administration to assist and empower young job seekers (being among the finalists of 2018 Breakthrough Auggie Awards and the winner of EuroVR Best Demo Award 2018). She is also working on a number of projects on educational applications of immersive technologies in STEM education, climate change awareness, professional training, medicine and therapy, career guidance, collaborative work, emergency management and other areas.

# 3. Dr. Lisa B. Bosman

## (Purdue University (West Lafayette, IN, USA)

**Title:**
**How to Teach and get Published within the Entrepreneurial Engineering Ethos**

**Abstract:**
This tutorial will (1) define and describe the Entrepreneurial Engineering Ethos, (2) explain the benefits of developing an Entrepreneurial Engineering Ethos, and (3) provide specific opportunities for how educators can integrate the Entrepreneurial Engineering Ethos into engineering curriculum. In addition, participants will receive an overview of how to convert teaching and learning changes into education research for publication and dissemination.

**Biography:**
Dr. Lisa Bosman, Assistant Professor at Purdue University, is an educator, researcher, innovator,

author and explorer. Her engineering education research interests include the entrepreneurial mindset, energy education, interdisciplinary education, and faculty professional development. For her, a PhD in Engineering and a few MS degrees (management and engineering) produced a stellar combination of analytical "let's make innovative things happen" problem-solving skills and professional "let's get things done" soft skills. Dr. Bosman's desire to increase STEM (science, technology, engineering, mathematics) education accessibility and attainment has resulted in her founding of the Purdue University iAGREE Labs (www.iagree.org).

Dr. Bosman has authored over 50 publications in international and national journals and conferences. In addition, she has recently authored the text, Teaching the entrepreneurial mindset to engineers (Springer-Verlag GmbH, 2018). She has obtained over $1M USD in education research funding from agencies including the National Foundation (NSF), Environmental Protection Agency (EPA), and the National Aeronautics and Space Administration (NASA). She has been an invited speaker and workshop facilitator for over 20 engagements. She is actively engaged in the American Society for Engineering Education (ASEE) and currently serves as a division officer.

# 4.
# Ms. Crystal Jing LUO, and Mr. Donn Emmanuel GONDA

## (The University of Hong Kong (HKU))

## (The Hong Kong University of Science and Technology)

**Title:**
**Code Free Bot: An easy way to jumpstart your chatbot!**

**Abstract:**
Advancement in technology and innovation in teaching such as chatbot and extended reality can be daunting for teachers, but as an educator, we need to leverage on these advancements to respond to the changes and challenges in the teaching and learning landscape. There are a number of tools available for teachers to use to overcome the challenges, and one of them is the application of artificial intelligence (AI) and chatbot. However, creating a chatbot requires complex computer programming skills, and it is usually built from scratch to fit the intended educational purpose, which makes it difficult for teachers.

In this workshop, we will be sharing our experiences gained from developing various chatbots for higher education in our work, and will guide the participants to adopt widely used chatbot engines to develop code-free chatbots. This workshop is suitable for teachers, instructional designers, and other educational practitioners who don't have a technical or coding background, but wants to develop and adopt chatbot in the teaching and learning process and/or for the course management purposes.

**Biography:**

**Ms. Crystal Jing LUO (The University of Hong Kong)**
Crystal is an Instructional Design Assistant from Technology-enriched Learning Initiative (TELI), the University of Hong Kong (HKU). She has rich experience in chatbot design and development, as well as to implement chatbot into flipped classroom for undergraduate students at HKU. Simultaneously, she carries out research mainly focusing on the adoption of flipped classroom, blended learning and Artificial Intelligence (AI) in Higher Education. Her research output has been recognized and awarded by academic conferences and journals.

**Mr. Donn Emmanuel GONDA (The Hong Kong University of Science and Technology)**
Donn is a part-time lecturer at the University of Hong Kong and a teaching associate at the Hong Kong University of Science and Technology. His research interest is integrating technology in classroom use, teacher's perception of the use of technology, and application of learning analytics to improve course delivery. His specialties cover both instructional design and educational technology and have led several e-learning projects including MOOC, SPOC, blended learning, and flipped classroom.

# 5. Chathura K. Sooriya-Arachchi

## (Department of Computer Science and Engineering, Institute of Information Technology, Colombo, Sri Lanka)

**1st title:**
**Creatively Contagious - unleash Creativity in Teaching and Learning**

## Abstract:

We live in a world that demands creative problem solvers, creative thinkers who can come up with innovative ideas and solutions to situations. However many believe that creativity is a trait one needs to be born with, whereas creativity is a muscle that needs training. There is great potential to incorporate creativity in teaching and learning. This interactive workshop aims in sharing a number of Creativity and Design Thinking methods, tools and techniques that can facilitate teaching and learning, along with inspirational examples/case-studies from the real-world.

## 2nd title:

## DESIGN THINKING APPROACH TO HIGHER EDUCATION TEACHING & LEARNING

## Abstract:

In a world that demands creative problem solvers, people are measured by the power of their thinking and decisions they make. There is potential to develop the skills and mindsets of the learners in preparing them to be able to face these challenges. Design Thinking is a human-centered, creative and holistic approach to problem solving. Design Thinking framework can be applied for higher education in facilitating a transformative learning experience to the learners, with the use of systematic tools and techniques for designing the learning experience to be student-centered, iterative and incremental in nature, while increasing student engagement. This tutorial suggests the need to employ Design Thinking framework for curriculum design, teaching, learning and training, while introducing to a range of Design Thinking tools and techniques that can be practiced as interventions throughout the teaching and learning cycle.

## Biography:

Chathura is a Senior Lecturer at Informatics Institute of Technology - Sri Lanka, having close to a decade of work experience from both IT industry and academia. Being a Masters degree holder from University of Colombo School of Computing, she is also a Certified City & Guilds Corporate Trainer, Accredited Practitioner Coach (IAPC & M) and a Certified Scrum Master for Agile Scrum Training. She has clocked in 300+ sessions, 600+ hours and 10,000+ people reach through her training, coaching and value addition sessions, where she incorporates Design Thinking and creative methods to enhance Teaching & Learning experience.

# 6. Fariz Alemuda

## (PT Telekomunikasi Indonesia)

**Title:**
**Workshop Hands-on IoT using LoRaWAN**

### Abstract:

Hi All IoT Enthusiasts,
We are delighted to inform you that we will conduct a one-day hands-on workshop using LoRa. LoRa is a new connectivity technology that leverages the low power and wide area network. LoRa really fits with IoT devices that need long battery life, small bandwidth, limited computing resources. ANTARES is Telkom Indonesia IoT Platform has been integrated with the LoRa technology, so you as the users will feel seamless experience while using LoRa and Antares. We provide an easy way to enabling your IoT applications.

The main goal is to be able to create a simple IoT application based on LoRa. Moreover, here is the outline of our workshop, first we are able to send IoT data from the real sensor using LoRa connectivity; second we are able to send data to the IoT device which is a downlink; last but not least, we will create a simple application to control the IoT device through an android application.

Looking forward to see you guys!

### Biography:

Fariz Alemuda is currently as a Senior IoT Engineer in Telkom Indonesia. He has been involving in the Internet of Things area since 2014. He got his Master Degree in Computer Science from National Chiao Tung University, Taiwan and Undergraduate Degree in Electronics Engineering from Universitas Gadjah Mada. All his researches are in IoT-related areas. He invented Antares.id, a oneM2M-certified IoT platform and LoRa.id as a public LoRaWAN network server. He is also actively conducting IoT workshops for universities, communities and conferences. It is delighted to collaborating with the academic societies to gain the global awareness in education.

# 7. Natalia Filimonova

## (Professor of Economics and the Head of Management and Marketing Department at Vladimir State University (Russia))

**Title:**
**Challenges to introducing gamification into the educational process at Russian universities**


**Abstract:**
Currently, researchers and practitioners pay great attention to the issues of gamification in education. Studies show a direct correlation between the game and students' increased motivation during classes. On the one hand, gamification makes any lesson more interesting and fun, reduces restrictions on the number of game participants and their location, increases students' motivation by involving them in learning. On the other hand, there are several difficulties in the application of gaming educational technologies, which include ambiguity in attitudes and perceptions of the game by participants, unhealthy competition, and a short-term effect of training and learning. According to Statista Research Department, the education gamification market will grow 13,4 times in 2020 compared to 2015. Gamification has not yet become widespread in Russian university practice. The analysis showed that the main challenges are the poor technological equipment of universities, the incompetence of the teaching staff in the information and communication sphere, the English language barrier because of the vast majority of Internet platforms are in English, and methodological lags in using the principles of gamification. Also, teaching in the format of a game or quest is not taken seriously in the modern educational system. In part, these problems can be solved by exchanging experience and using a standardized set of allowed games in various disciplines.


**Biography:**
Natalia Filimonova is a professor of Economics and the head of Management and Marketing Department at Vladimir State University (Russia). She is an Advisory Board member of the Accounts Chamber of Vladimir Region and a Dissertation Council member of the Financial University under the Government of the Russian Federation (Moscow). She is also a Federal expert of the scientific and technical sphere at the Scientific Research Institute of the Federal Research Centre for Projects Evaluation and Consulting Services (Moscow, Russia), where she

is involved as a federal grant reviewer for the Russian Scientific Foundation and the Ministry of Education and Science of Russian Federation.

She received her Ph.D. from the Saint-Petersburg State University (Russia). Her current research projects focus on small and medium business development and their influence on regional economy.

Prof. Filimonova serves on editorial boards of several journals (Izvestiya Vysshikh Uchebnykh Zavedenii, Seriya Teknologiya Tekstil'noi Promyshlennosti which is indexed by Scopus and Newsletter of the Vladimir region Audit Chamber), acts as a reviewer for many scientific journals and presents her work at international conferences and other venues.

She awards grants from Russian Humanitarian Scientific Found for her researches (2010 - 2011, 2011 - 2012, 2015 - 2016). She has been a Fulbright scholar at City University of New York (2017 – 2018).

# 8. Prof. Tokuro Matsuo, Ph.D

## (Graduate School of Industrial Technology, Advanced Institute of Industrial Technology, Japan)

**Title:**
**The Accreditation of Education on Engineering**

**Affiliation:**
**Professor, Advanced Institute of Industrial Technology, Japan**

**Abstract:**
Most of universities take accreditation to prove the quality of education and are mostly required to take it. However, taking accreditation is required by regulation and law of the country. And also, some universities may recognize that importance of accreditation is to pass the evaluation rather than assessment of education. Essentially, accreditation should be utilized to improve the education analyzing weakness and strength of the organization. Accreditation sometimes provides a branding for university to be recognized its educational

result and achievement. In this talk, I will introduce an international accreditation provided by international accreditation association for higher education (AHE). The AHE accreditation employs international standards, evaluation of individual strength, feedback system of evaluation and assessment, clarity of evaluation. AHE also has a unique model to support university on branding, improvement of education, enhancement of research level, enhancement school in itself with diversity.

## Biography:

Dr. Tokuro Matsuo is a full professor at Advanced Institute of Industrial Technology since 2012. He received the doctor degree of engineering from Dept. of Computer Science at Nagoya Institute of Technology in 2006. He is an invited professor at University of Nevada, Jas Vegas, USA since 2016; a guest professor at Bina Nusantara University, Indonesia since 2015; a research project professor of Collective Intelligence Research Center at Nagoya Institute of Technology, Japan since 2015; a research fellow of SEITI in Central Michigan University, USA since 2010; and an executive director of International Institute of Applied Informatics since 2011. He was a visiting researcher at University of California at Irvine in 2010-2011; was a research fellow at Shanghai University between 2010 to 2013; and was a research project professor of Green Computing Research Center at Nagoya Institute of Technology between 2011 to 2014. His current research interests include electronic commerce and business, service science and marketing, business management, artificial intelligence, material informatics, tourism informatics, convention administration research, and incentive design on e-services. Some of his researches are presented in the top international conferences on AAAI, IEEE CEC, AAMAS, and WWW. He chaired a lot of international conferences including IEEE/ACIS SNPD 2009, 2012 and 2014, IEEE/ACIS ICIS 2010 and 2013, IEEE IWEA 2007-2012, ACAN 2005-2012, and AAI 2012-2016. He gave over 70 keynotes and invited talk at international conferences, symposia, and seminars. He also received over 40 awards and research grants from research foundations, company and Government. He is also commissioned as Japan Conference Ambassador, Kumamoto City MICE Ambassador, and Adviser of Information Promotion of Japan.

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IMPORTANT DATES

**Conference Date**

**10-13 December 2019**

**Royal Ambarrukmo Hotel, Yogyakarta - Indonesia**

**Paper submission deadline:**
28 June 2019
**Notification of acceptance:**
20 September 2019
**Camera ready submission & Registration:**
09 October 2019 (early bird)
**Camera ready submission & Registration:**
20 October 2019 (Late bird)
**Tutorial proposals:**
20 October 2019

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## IMPORTANT DATES

**Conference Date**

## 10-13 December 2019

### Royal Ambarrukmo Hotel, Yogyakarta - Indonesia

~~**Paper submission FINAL deadline:**~~

~~05 September 2019~~

~~**Notification of acceptance:**~~

~~**25 September 2019**~~

~~**Camera ready submission & Registration:**~~

~~15 October 2019 (early bird)~~

**Camera ready submission & Registration:**

31 October 2019 (Regular)

**Tutorial proposals:**

25 October 2019

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# Program Schedule

## Monday, 09 December 2019

### Keraton Ballroom

| | |
|---|---|
| 13:00 - 17:30 | Registration |
| 13:00 - 15:00 | Industrial Speaker : Fariz Alemuda - PT Telekomunikasi Indonesia "Workshop Hands-on IoT using LoRaWAN" (Moderator : Dr Ayu Purwarianti) |
| 15:00 - 15:45 | Industrial Speaker : Prof. Dr Ekaterina Prasolova-Førland (Norwegian University of Science and Technology (NTNU)) " Immersive Technologies for learning and training: a cross-disciplinary approach." (Moderator : Dr Ayu Purwarianti) |
| 15:45 - 16:30 | Industrial Speaker : Dr. Lisa B. Bosman (Purdue University (West Lafayette, IN, USA) "How to Teach and get Published within the Entrepreneurial Engineering Ethos" (Moderator : Dr Ayu Purwarianti) |
| 16:30 - 17:15 | Industrial Speaker : Dr. Taku Jiromaru (President Director of OME Inc. & Conference Service Inc. and Faculty Member of Kurume University) (Moderator : Dr Ayu Purwarianti) |
| 19:00 - 21:00 | Welcome Reception - Location: Restaurant Garden on the 1st Floor |

## Tuesday, 10 December 2019

### Keraton Ballroom

| | |
|---|---|
| 07:00 - 17:00 | Registration |
| 08:00 - 09:00 | Opening Sessions |
| 09:00 - 10:00 | Keynote Speech by Prof. Seiichi Kawata, President of Graduate School of Industrial Technology, Advanced Institute of Industrial Technology - Japan (Moderator : Agung Trisetyarso, Ph.D ) |
| 10:00 - 10:30 | Coffee Break |
| 10:30 - 11:30 | Keynote Speech by Dr Henry Feriadi (Rector of Christian Duta Wacana University - Indonesia. Moderator : Spits Warnars, Ph.D) |
| 11:30 - 12:00 | Photo Session (Indoor and Outdoor) |
| 12:00 - 13:00 | Lunch |

| | | |
|---|---|---|
| 17:45 - 18:00 | 1570581488 | Engage Your Students Before Class: More Pre-Class Engagement for More Effective Flipped Classrooms |
| 18:00 - 18:15 | 1570581671 | Design and First Insights of a Case Study on Storified Programming MOOCs |
| **Pemandengan 1** | | |
| **SESSION B6** | | |
| 15:30 - 15:45 | 1570582045 | Developing a System to Support Formative Teacher Feedback in Foreign Language Writing |
| 15:45 - 16:00 | 1570582233 | Adaptive recommendation for question decomposition in Web-based investigative learning |
| 16:00 - 16:15 | 1570582306 | Teaching Generic Competences in Software Engineering via E Learning |
| 16:15 - 16:30 | 1570582579 | The use of Microframework for Portable and Distributed ePortfolio Development |
| 16:30 - 16:45 | 1570582912 | Design Features for Gender-specific Differences in Blended Learning within Higher Education in Indonesia |
| 16:45 - 17:00 | 1570583256 | A Quantitative Study on the Effects of Learning with Mobile Devices in MOOCs |
| 17:00 - 17:15 | 1570585446 | CHAT: a Cultural Heritage Adaptive Tutor |
| 17:15 - 17:30 | 1570588851 | Motivation as Basis for Building Infrastructure for Hardware MOOCs |
| 17:30 - 17:45 | 1570588908 | Code Free Bot: An easy way to jumpstart your chatbot! |
| 17:45 - 18:00 | 1570568056 | Design of A Web Development Attitudes Survey |
| 18:00 - 18:15 | 1570568085 | Pipelined MIPS Simulation A Plug-In to MARS for Supporting Pipelined Simulation and Branch Prediction |
| **Pemandengan 2** | | |
| **SESSION C6** | | |
| 15:30 - 15:45 | 1570591527 | Supporting Computer Science Student Reading through Multimodal Engagement Interfaces |
| 15:45 - 16:00 | 1570591786 | Reinforcing Blended Learning Approach by Using Blackboard Collaborate in Computer Lab Environment to Enhance Students' Learning Experience |
| 16:00 - 16:15 | 1570591837 | Success Model for Effective Use of LMS in Inculcating 21st Century Skills among University Graduates |
| 16:15 - 16:30 | 1570591839 | Impacts of Online Academic Help Seeking Behaviors on Undergraduate Student Self-Learning |

Irwan Kautsar <irwan@umsida.ac.id>

# [TALE 2019] Your paper #1570582579 ('The use of Microframework for Portable and Distributed ePortfolio Development')

1 message

**tale2019-chairs@edas.info** <tale2019-chairs@edas.info> Thu, Sep 26, 2019 at 10:00 PM
Reply-To: TALE 2019 <tale2019-chairs@edas.info>
To: Irwan Alnarus Kautsar <irwan@umsida.ac.id>, Riyanarto Sarno <riyanarto@if.its.ac.id>

Dear Irwan Alnarus Kautsar and Riyanarto Sarno:

Thank you very much once again for submitting a paper to The 2019 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE).

Congratulations - your paper #1570582579 ('The use of Microframework for Portable and Distributed ePortfolio Development') for TALE 2019 has been **accepted** for presentation at the conference as a Full Paper, subject to the reviewers' feedback being satisfactorily addressed.

The reviews are below or can be found at https://edas.info/showPaper.php?m=1570582579.

## Review paper 1

**Comments to Authors: Specific Comments by the Referee for the Author(s)**

The paper documents a new ePortfolio system developed for online and offline use.

The paper reads more like the technical documentation of the system rather then a paper investigating the system's suitability for the task in comparison to the state of the art.

The use of ePortfolio as mere "assessment portfolio" fall a bit short of what ePortfolios are developed for (see https://www.researchgate.net/publication/48990087_Distributed_e-portfolios_to_recognise_informal_learning). ePortfolios in particular are there to help learners collect, then arrange into a coherent story, and support evaluation in the subsequent assessment.

The language is very inaccessible - requiring an editorial service or language check by a friendly native speaker.

**Reviewer Recommendation: Comments on plagiarism, falsification, fabrication, or omission of significant materials.**

Should be downgraded to a poster presentation without paper or with only a one or two page paper. It is an actual system implementation, but the paper is not written properly - especially the connection to the state of the art is bit poor. The language is rather poor, too - with lots of grammar and spelling mistakes.

## Review paper 2

**Comments to Authors: Specific Comments by the Referee for the Author(s)**

The paper presents a distributed e-portfolio system allowing off-line use. The idea is relevant since off-line situations are frequent in developing countries. However, technically off-line enabled systems are something common today. Thus in my opinion the most interesting part is to measure the system use impact in users experience. A Technology Acceptance Model can be used to evaluate the system.

**Reviewer Recommendation: Comments on plagiarism, falsification, fabrication, or omission of significant materials.**

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Congratulations on the acceptance of your paper! Should you have any additional questions, please feel free to contact us. We look forward to seeing you in Yogyakarta in December 2019.

Yours sincerely,

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# Certificate of Presenter

is hereby given to:

**Mr. Irwan Alnarus Kautsar**

for their presentation of

**Paper ID 1570582579**

**The use of Microframework for Portable and Distributed ePortfolio Development**

at

International Conference on Teaching, Assessment and Learning for Engineering
(IEEE TALE 2019)

which were held at:
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# The use of Microframework for Portable and Distributed ePortfolio Development

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***Abstract*— ePortfolio is an essential tool used for track and evaluates the learning process. This paper presents the current development of a web-based ePortfolio system that has been developed with Microframework. ePortfolio commonly used as a tool to track and evaluate student's artifacts as a result of the course assignment. Furthermore, ePortfolio is needed for lecturers who have been implementing Project-Based Learning (PBL) and Lab-Based Education (LBE). On the other hand, the lack of internet access that still an issue in Indonesia as developing countries ePortfolio needs to be accessed in both online and offline conditions. The proposed method is to develop a web-based application using python based micro-framework. The web-based application is to enable users to use in offline condition (no internet access). As a result, a web-based application that will be used for both students and lecturers to upload and evaluate the uploaded artifacts and synchronize its contents to the existing University Information Systems. As part of the development process, the proposed ePortfolio has been tested on a mini device installed Access Point (AP). With this approach, lecture and student could use the web-based ePortfolio in the classroom with no internet conditions. Both users need to synchronize the artifact to the ePortfolio server in a distributed manner when the mini device is connected to the existing university ePortfolio.**

**Keywords—ePortfolio, Higher Education Institution, Project-Based Learning**

## I. INTRODUCTION

The main goal of Industry 4.0 Strategic Initiatives that elaborated by the Ministry of Research, Technology and Higher Education (RTHEI) Indonesian Government is to achieve Competitiveness and Sustainability on Industry and Higher Education Institution (HEI) [1]. HEI is the main key to these initiatives. Furthermore, HEI academic course must adapt the learning process for the need not only in the theoretical area but also practice in the digital creative industries in the era Industry 4.0. [2], [3].

Project-Based Learning (PBL) offers a challenge for students to apply the knowledge and skill by creating an application to solve real-world problems [4], [5]. Also, Lab-Based Education is an educational methodology that has been implemented by the majority of universities in Japan to enhance research and publication [6].

For this matter, the use of an electronic-based portfolio (ePortfolio) in Higher Education Institution (HEI) becoming an important tool to track, evaluate, and recognize academic stakeholders (lecturers and students) achievements [7], [8]. For lecturers, ePortfolio is used as a tool for documenting an academic activity (teach and research). For students, ePortfolio also became important because it helps to store the progress that being made in the learning process [9]. Furthermore, lecturers need to evaluate the learning process and score assignments that students have submitted as a group or individually.

Our previous research, present Lecturer Based Supportive Tools (LBST) that helps lecturers create learning content online and offline conditions [10], [11]. Also, it discusses interoperability among the learning management system and distribution system with web service-oriented architecture [12]–[14]. As a completory, this paper proposed the supportive tool that supports students submit their progress report and their artifact while lecturers implement Project-Based Learning (PBL) and Lab-Based Educations (LBE).

## II. PROBLEM ANALYSIS

### *A. Student Report, Grading*

One advantage of the use of ePortfolio (or other support learning processes such as Learning Management Systems - LMS) is fully supported in grading that based on student's report. Aside from presenting the learning process through an online class and student's obligation to submitting their assignment, lecturers need to know how the learning process of their students. To knowing the learning process, it needs to ask several questions such as: "In what time they mostly submitted?", "Are they (students) find difficulties while submitted a system?", "Which submission that gains more attention?". Even though the existing ePortfolio and other LMS offers many features, but few of it to have features that could support the lecturer grade the student's submissions on the existing university information systems.

### *B. Digital Divide*

The existing ePortfolio and other LMS are designated to be a centralized system. Also, the installation process itself needs more effort for a beginner user [15]. On the other side, Indonesia is a developing country that still faces the digital divide issues [16], [17]. These conditions are one of the causes that ePortfolio and LMS's are slow to spread and adapt to the learning process, especially in the higher education level [18].

### C. *Research Questions*

According to previous problem analysis, the research question was: "How we provide the student with web-based ePortfolio that can be used in offline and online condition for student report, lecturers grading and export the results in existing information systems?".

## III. Proposed Method

We propose to develop a web-based ePortfolio that can be accessed in online and offline conditions. The online condition means the proposed ePortfolio will be accessed in online matters. The offline condition means that the Proposed Portfolio is used in the offline condition that no need internet connectivity. By using the web-based micro-framework such as Flask and Python library called WSGI, it possible to develop web applications that adapt in both conditions [19]. To synchronize the content of both versions (Online and Offline version), we propose the current development ePortfolio in the following section.

### A. *Architecture*

The proposed ePortfolio project name is YADeH (Yet Another Distributed ePortfolio for Higher Education). There are two versions of YADeH. Firstly, the YADeH server and secondly, YADeH-node. YADeH-server is a YADeH version that can be accessed online. YADeH-node is a YADeH version that designed to implemented in a mini device or used in an offline condition. The architecture of both versions was shown in Fig. 1:

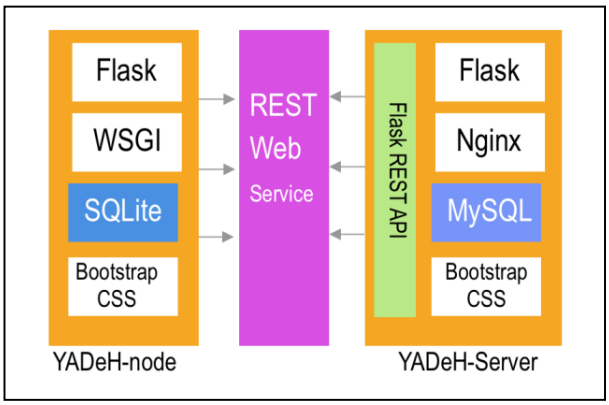


Fig. 1. Proposal for YADeH architecture.

Flask Web Framework is a python based web framework that extremely small size (version 1.0.2 size is 732 KB) [19]. Also, it already includes Werkzeug. [20]. Werkzeug is a small WSGI (Web Server Gateway Interface) that enables running Flask web application with one single command and it's running a web server [21]. This means, a user no need installs Apache/Nginx web server while installing the YADeH-node version.

For architecture development, Flask is adapting an MVC (Model-View-Controller) framework that separates the application layer and the presentation layer. This mean, the *.py file and *.html file is in a different directory. For future development, developer teams such as Front-end Developer and Back-end developer will be more convenient if the *.py file and *.html file is in a different directory.

The Flask Framework will recognize automatically all *.html files in the template folder. As the need for responsive web, the *.css, *. js file needs to store in the static folder. Fig. 2 show the separation of the presentation layer and the application layer.

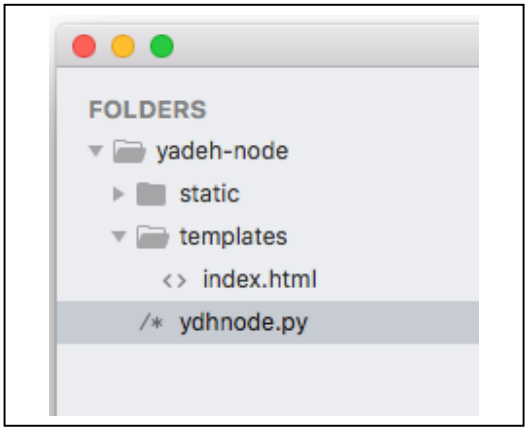


Fig. 2. Directory Structure of YADeH-node version

All request routing is controlled in *.py files. For example, we have following index.html in templates directory:

```
<!doctype html>
<html>
  <head>
    <title>YADeH Node</title>
  </head>
  <body>
    <h2>YADeH node here.</h2>
  </body>
</html>
```

Then, we have following ydhnode.py file that present the index.html if there is any request in homepage using "app.route("/"):

```
1  from flask import Flask, render_template
2  app = Flask(__name__)
3
4  app.route("/")
5   def hello():
6      return render_template('index.html')
7
8   if __name__ == '__main__':
       app.run()
```

To activate the Flask application and WSGI web server, the user only needs to execute a single command as same as running python. Fig. 3. shown that *.py file has executed and activated the WSGI server.

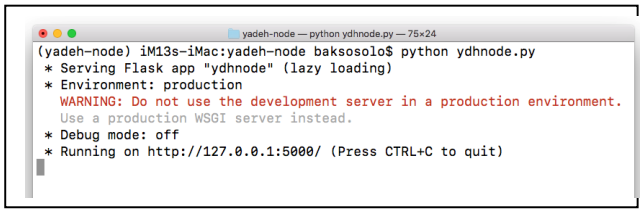


Fig. 3. WSGI activated by running *.py files.

By default, WSGI using port 5000 to serve its web requests. At local access, a user can request by accessing localhost with port 5000. The response of the Web Server shown in Fig. 4.

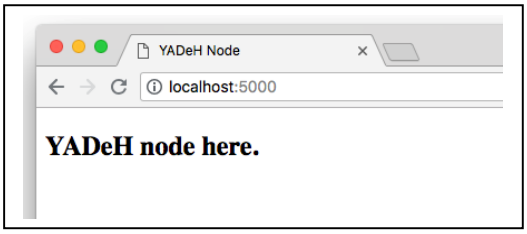


Fig. 4. Access Flask Application from a local device at port 5000.

Flask is using Jinja Templating Engine. Jinja is one of famous python template engine that developed by the same team of Flask Web Framework. Jinja has made it easier to implement Bootstrap CSS or other CSS Framework for mobile responsive. Mobile responsive CSS is enabled users accessing the HTML layout with mobile devices. With a mobile-friendly CSS framework, we no need to develop a native mobile application.

With use Flask and WSGI, we could provide a web application accessed by a user in offline conditions. To continue to support users using YADeH-node in offline condition, we implement SQLite for data storage. This means users are not necessary to install MySQL or other server-based Databases. Combining Flask, WSGI, SQLite, and Bootstrap CSS, a user can use the YADeH-node on their laptop or installed in mini devices such as APC Rock [22]. By running it in the mini device and connecting it with an access point, YadeH-node can be accessed in a classroom with conditions that there are not available internet connections.

## B. *User Interactions*

The user's interactions with YADeH-node are illustrated in Fig. 5:

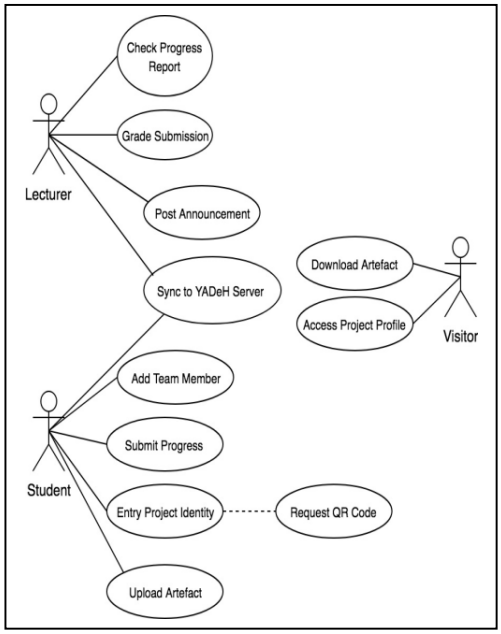


Fig. 5. User Interaction with YADeH-node.

One of the important features at YADeH-node is to upload the artifacts to YADeH-server. To able upload the saved artifacts from YADeH-node to YADeH-server, the user need to configure the YADeH-server address. These addresses are used to upload the artifacts through the YADeH-server Web service.

For web services, Flask provides Flask-restful API that can be used to manage a piece of information from the created log. First, we need to provide a resource with the following format:

```
LOCAL_LOG = {
    'title': {'value': 'Acces YS_L'},
    'evalue': {'value': '1534067324'},
    'etime': {'value': 'August 12, 2018 9:48:44'},
}
```

To expose the above resource, it needs to declare the "Resource" Class in the application and route the resource.

```
class LogList(Resource):
    def get(self):
        return LOCAL_LOG

api.add_resource(LogList, '/loglist')
```

From the above script, the statement "api.add_resource(LogList, '/loglist')" is used to route the request "/loglist" to "LOCAL_LOG" resources. Fig. 6, shown illustration for accessing web service.

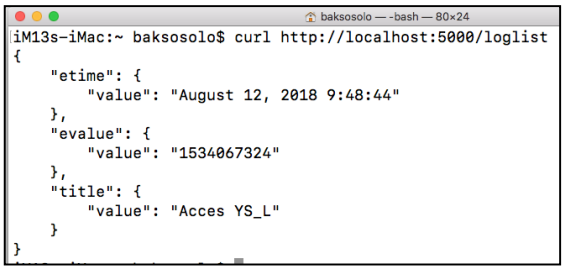


Fig. 6. Example Web Service Access

Using Flask-rest API, we can get LOCAL_LOG from YADEH-server Log (YS_LL) and YADEH-node Log (YN_LL). YS_LL and YN_LL are used for knowing which is the newest activity that users have been working on YADeH. If YS_LL value is less than YN_LL value, the content from YADeH-node is the newer version. If so, the "upload_mode" that execute uploading process will have executed. Otherwise, the "download_mode" will download the artifacts from YADeH-server. After users have selected in which version of the artifacts that are uploaded/downloaded, users need to execute the synchronization process. In early development, upload mode and download mode selection are using the EPOCH time variable. The newer version is considered with bigger value EPOCH time. These synchronization methods are illustrated in Fig. 7.

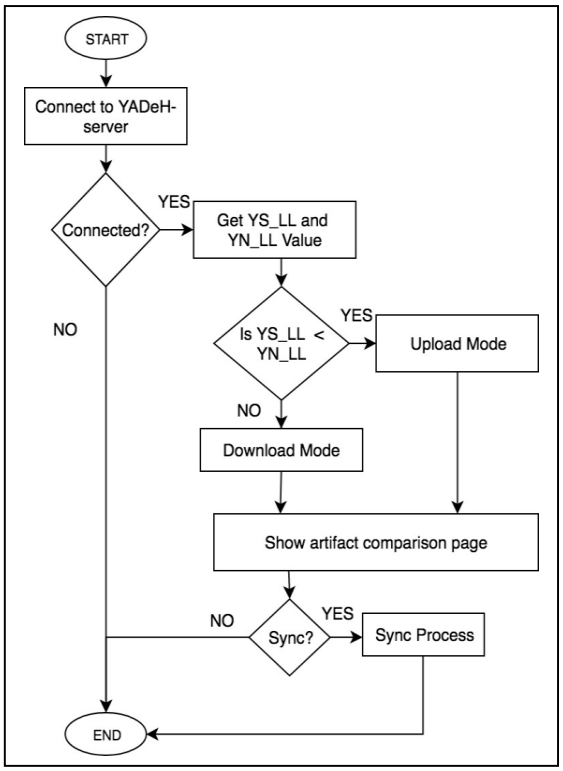


Fig. 7. Sync Process from YADeH-node to YADeH-server.

## IV. Research Discussion And Implementation

In this section, we will discuss how the research conduct and present the implementation and discuss the basic features that the lecturer needs to support on current development portfolio.

### A. Research Discussion

In this research, YADeH was tested to students at Informatic Departments, Faculty of Engineering, Universitas Muhammadiyah Sidoarjo at Academic Year 2017/2018. At those academic Years, the author has implemented Project Based Learning with two different groups among 6 class groups. The following table shows the Class Code and the Course Name.

TABLE I. Course Name And Class Code

| Course Name | Class Code |
|---|---|
| Human Computer Interaction (HCI) (8th Semester) | HCI-8A3<br>HCI-8B4 |
| Analysis and Design Information Systems (ADSI) (6th Semester) | ADSI-6A1<br>ADSI-6A2 |
| Information System (IS) (4th Semester) | SI-4A3<br>SI-4A4 |

The principles of Lab Based Education (LBE) are knowledge transfer from Top level (Faculty Member) into Higher Level (Post-Doc Researcher), Mid-Level (Graduate Students) and Basic Level (4th year Undergraduate Students).

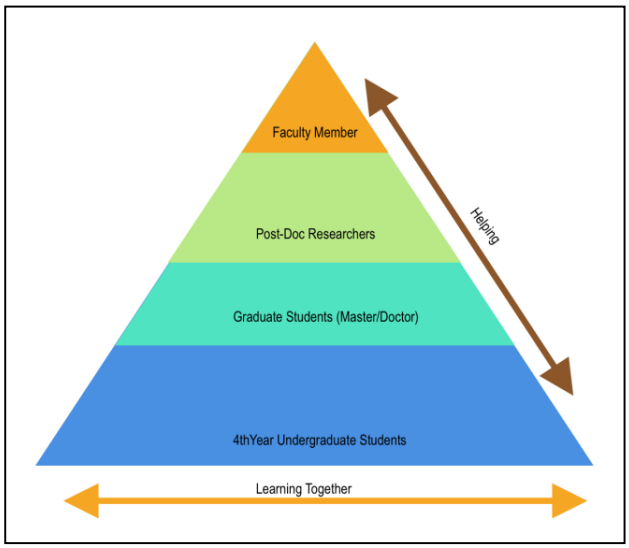


Fig. 8. Laboratory Based Education Principles

To implement Project Based Learning (PBL) and Lab Based Education (LBE), we assign all students to make an application as the Final Project. Also, set a rules that 8th semester students are responsible with UX/UI Design (as the implementation of their HCI courses), 6th semester students are responsible with diagram design (as the implementation of their ADSI courses) and 4th semester students responsible with prototype development (as the implementation of their IS courses). Also as a part of the experiments, 6 class groups are formed into 2 main groups. The group separations are illustrated in Fig. 9.

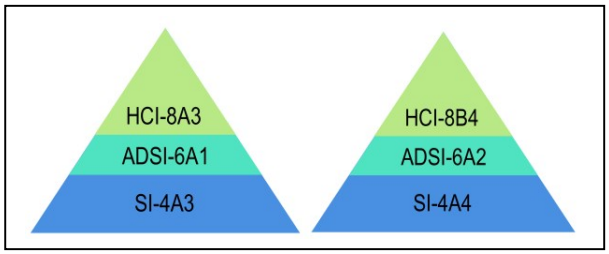


Fig. 9. Odd and Even Class Groups

### B. Implementation

The first module to be developed is the user invitation module on YADeH-server. On YADeH-server, lecturers are provided with a user invitation dashboard that invites 8th semester students email. With this feature, Lecturer no needs to add all student data. This scenario also eliminates unauthorized users. Also, distribute the invitation efforts that we had experienced when using LMS on the beginning semester. It is necessary to provide a status to helps lecturers knowing the invited student has already activated the account.

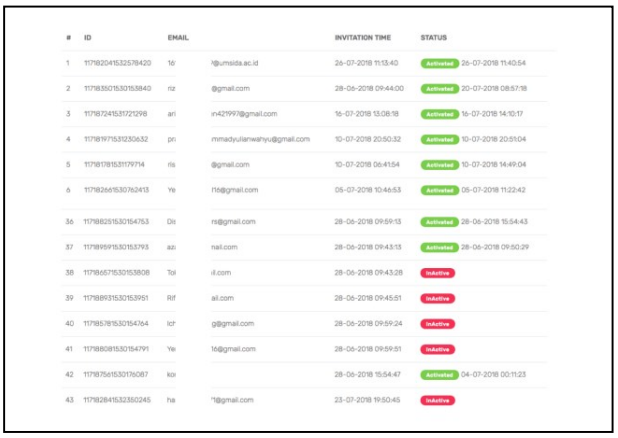

Fig. 10. Invitation dashboard of YADeH-server

Next to be developed is YADeH-node. YADeH-node is a YADeH version that mainly used by students. Firstly, Students need to provide detail information about their projects. Fig. 11 shown student dashboard to add their project description.

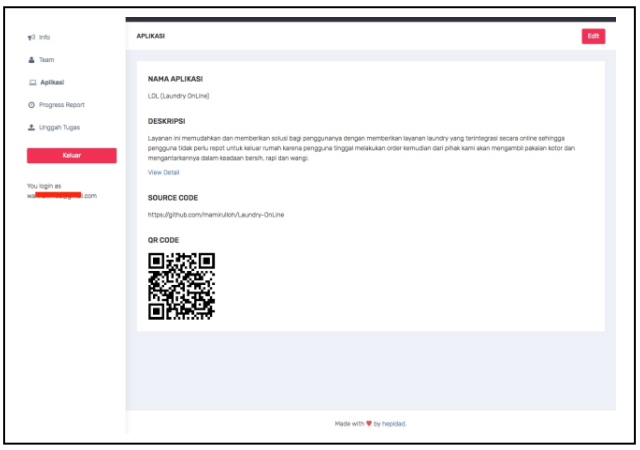

Fig. 11. User dashboard to describe their project.

As a requirement, it needs to provides a dashboard for students to submit their assignments. In this implementation, students were asked to submit their Project description, report file (PDF), Presentation files (PDF) and Poster (JPG/PNG). Fig. 12. Shown user dashboard for upload the artifacts.

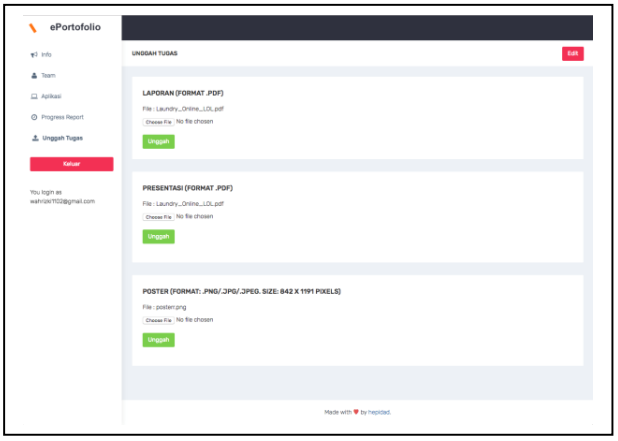

Fig. 12. User dashboard for submitting an artifact

As part of student assignment for creating a poster, student obligate download QR code that needs to paste in the created poster. The QR code represents the URL for access Project profile from each team. Also, in the user dashboard, they will have given an option to share the source code of their project or not. If they select option “Yes”, the URL of project source will show on their project profile. The front page of YADeH-server that present all students projects are shown in Fig. 13.

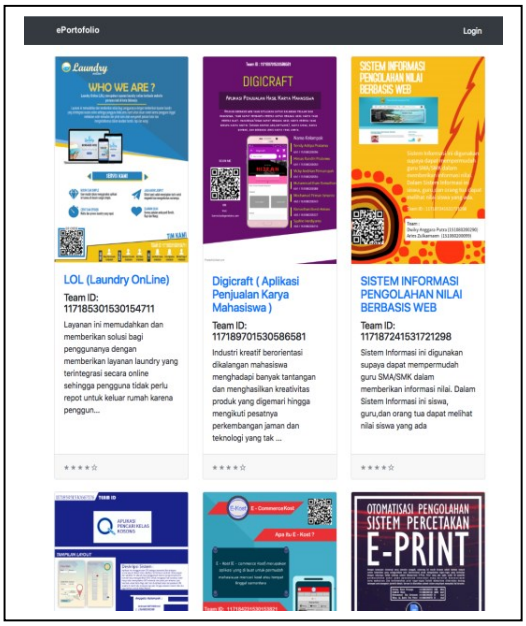


Fig. 13. The YADeH-server front page

After the student and his/her team are already submitted the artifact, lecturers are needed to grade the student artifact to all his/her team. On the YADEH-server dashboard, lecturers can grade the assignment and it will give the grading results to all team members. Lecturers no need to input the score one by one for each student. This will be helpful when each team is consisting of different students from different class groups. The lecturer dashboard for grading the assignment is shown in Fig. 14.

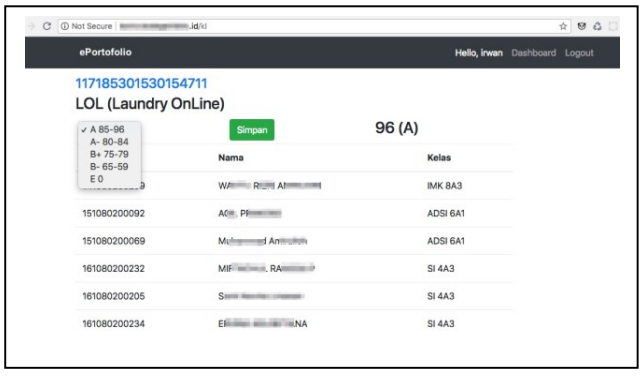


Fig. 14. Lecture dashboard for grade the assignment

To answering the research questions from section II.A., we have been implementing log creation based on user's activities and their IP address. From this log, we can query to knowing which project has more visitor, which process is "FAIL" and when they submit the artifacts. Fig. 15. shown the created log.

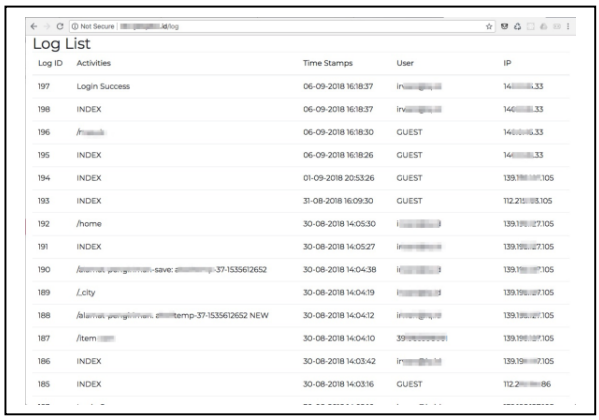


Fig. 15. Log created by YADeH-node and YADeH-server

By providing a log, it can be used to track where students are accessing both YADeH-server and YADeH-node. Because both YADeH-server and YADeH-node are designated to record their interaction with all YADeH systems. These logs are useful for future research on learning analytics.

## V. Conclusion and Future Works

### A. Conclusion

YADeH-node and YADeh-server were introduced as the integration of distributed portfolios that can be used in both conditions: Online or Offline conditions. With YADeH, a student can store their submission as an artifact that can be viewed by others easily. Also, lecturers are helped with a grading system that provided by YADeH-server.

Because it has been developed with Microframework, it is possible to install it on the mini device or other hand carry device. The current development application can be used as portable ePortfolio that support student manages their learning process daily.

### B. Future Works

For future works, the development of other features is needed. For example, integration with other web services from open source ePortfolio systems (such as Mahara). Or with other open-source LMS web services (Moodle, Chamilo, Canvas) to support the widespread use of ePortfolios [23]–[26].

Also, as part of future works, logs created by YADeH that determining user activities will be analyzed.

## Acknowledgment

We would like to thank *Direktorat Riset dan Pengabdian Masyarakat* (DRPM) from *Kementerian Riset, Teknologi, dan Pendidikan Tinggi* for funding this research.

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