

# (ETASE-2019)



## **2nd International Symposium on Emerging Technologies and Advancements in Applied Sciences and Engineering**

**The Howard Plaza Hotel Taipei, Taiwan**

**July 06-07, 2019**



**ESRDB**

# ***CONFERENCE BOOK OF ABSTRACT PROCEEDINGS***

***ESRDB***

Engineering Science Research & Development Board



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# **Book of Abstracts Proceedings**

**2nd International Symposium on Emerging Technologies and Advancements in Applied Sciences and Engineering (ETASE-2019)**

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*International Conference on Computing, Software  
Engineering and Big Data (CSEBD-2019)*

**Venue: The Howard Plaza Hotel Taipei, Taiwan**

**Conference Theme:** : Provide platform for researchers in a wide area of topics from all fields related to Engineering, Technology, Computer and Applied Sciences stakeholders.



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Conference Supervisor

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## CONFERENCE TRACKS

- Basic Science
- ICT
- Electrical Engineering
- Mechanical & Industrial Engineering
- Civil Engineering
- Business and Management Studies
- Electric Drives and Control
- Electrical Machines
- Instrumentation Engineering
- Power Generation, Transmission and Distribution
- Power System Engineering

## CONFERENCE CHAIR MESSAGE

**Ms. Mei Shu Lai**

“International Conference of Engineering Science Research and Development Board” is a platform that thrives to support the worldwide scholarly community to analyze the role played by the multidisciplinary innovations for the betterment of human societies. It also encourages academicians, practitioners, scientists, and scholars from various disciplines to come together and share their ideas about how they can make all the disciplines interact in an innovative way and to sort out the way to minimize the effect of challenges faced by the society. All the research work presented in this conference is truly exceptional, promising, and effective. These researches are designed to target the challenges that are faced by various sub-domains of the social sciences and applied sciences.

I would like to thank our honorable scientific and review committee for giving their precious time to the review process covering the papers presented in this conference. I am also highly obliged to the participants for being a part of our efforts to promote knowledge sharing and learning. We as scholars make an integral part of the leading educated class of the society that is responsible for benefitting the society with their knowledge. Let’s get over all sorts of discrimination and take a look at the wider picture. Let’s work together for the welfare of humanity for making the world a harmonious place to live and making it flourish in every aspect. Stay blessed.

Thank you.

Ms. Mei Shu Lai

Conference Chair

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## CONFERENCE AGENDA

**Conference Name: 2nd International Symposium on Emerging Technologies and  
Advancements in Applied Sciences and Engineering (ETASE-2019)**

**Day & Date: Saturday, July 06, 2019**

**Venue: The Howard Plaza Hotel Taipei**

### Timeline of Day 01

09:00 - 09:05 am	Registration of Participants
09:00 am - 09:05 am:	Registration & Kit Distribution
09:05 am - 09:10 am:	Introduction of Participants
09:10 am - 09:15 am:	Inauguration and Opening address
09:15 am - 09:20 am:	Grand Networking Session

**Tea/Coffee Break (09:20 am - 09:30 am)**

**DAY 01 Saturday (July 06, 2019)**

**Presentation Session (09:30 am - 11:00 am)**

**Venue: Room 1**

**Track A: Business, Social Sciences and Humanitie**

<b>Presenter Name</b>	<b>Manuscript Title</b>	<b>Paper ID</b>
Li-Ling Yang	Impacts of An Interdisciplinary Community Engagement Project on Pre-Service Teachers Understanding Of Engineering Design And Self-Efficacy In Teaching It	RSEBM-July19-102
Eva Muchova	How Likely is the European Union Enlargement ?	RSEBM-July19-103
Hanna Keila Garcia	Convergence of International Investment Law and Human Rights: The Curious Case of Social Impact Investments In The Philippines	RSEBM-July19-106
Hannah Isabella P. Chan	Convergence of International Investment Law and Human Rights: The Curious Case of Social Impact Investments In The Philippines	RSEBM-July19-106C
Yumin Zheng	Creating A Dynamic Difficulty Adjustable Game For Elderly People	RSEBM-July19-108

**Track B: Engineering, Technology & Applied Sciences**

Yi-Chun Lin	Reversible Data Hiding Based on Multi-Dimension Difference-Histogram and Bilinear Interpolation	ETASE-JULY19-TW101
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**Lunch Break & Closing Ceremony (11:00 am - 12:00 pm)**



## **Conference Day 02 (July 07, 2019)**

Second day of conference will be specified for touristy. Relevant expenses are borne by Individual him/herself.

***TRACK A***

***BUSINESS, ECONOMICS, SOCIAL SCIENCES & HUMANITIES***





# Impacts of An Interdisciplinary Community Engagement Project on Pre-Service Teachers Understanding of Engineering Design and Self-Efficacy in Teaching It

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**Keywords:** Community Engagement, Engineering Design, Pre-Service Teachers, Self-Efficacy

This research project is to evaluate the impacts of a community-engaged project on the pre-service teachers understanding of engineering design and self-efficacy in teaching it. In 2012 the National Research Council (NRC) published A Framework for K-12 Science Education, which was intended to guide the development of the next-generation set of science standards, Next Generation Science Standards (NGSS) (Achieve, Inc., 2013). This new framework presents a new vision for education in the sciences and engineering in which students, over multiple years of school, actively engage in scientific and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields (NRC, 2012, pp. 9-10). Since the release of NGSS in 2013, one of the challenges many school districts have been facing while implementing the NGSS-aligned science curriculum and instruction is the elementary school teachers unfamiliarity with the engineering practices and core ideas that are explicitly included in the NGSS. To prepare future generations of teachers who can realize and implement the new vision and support their development of adequate understanding of engineering design and competency in teaching it, 48 education students in a two-semester sequence of elementary science methods course at a liberal arts university in the Northeast USA in 2018-19 academic year participated in an interdisciplinary community engagement project. In collaboration with 29 engineering undergraduates to educate local fourth graders about engineering design and wind energy, the education students deepened their own learning. Assessment was carried out through pre- and post-tests, with metrics exploring pre-service teachers content knowledge in engineering design and self-efficacy in teaching it. Project outcomes were assessed by comparison of baseline data (before the project begins) against results at the conclusion of the project. Initial results from the assessment tools will be reported at the conference presentation.



## How likely is the European Union Enlargement ?

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**Keywords:** European Union, Economic And Monetary Union, Eurozone Enlargement, Convergence

The European Union consists of twenty eights countries, which covers about eight percent of the world's population. Belgium, Germany, France, Italy, Luxembourg and the Netherlands were the first countries involved in economic cooperation in Europe after World War II. In 1999 eleven of the Member States have deepened economic cooperation and replaced their national currencies with the euro. The Economic and Monetary Union (EMU) was considered as a logical strengthening of economic and monetary ties and links within the European Union. The paper focuses on highly debated and controversial issue and that is a prospect of Eurozone enlargement. The applicants for the EU membership are obliged to meet the conditions laid down by the Treaty on the EU. The Treaty of Maastricht specifies the key conditions to be met to join EMU. The theory of optimum currency area is applied as the theoretical basis for analyzing the benefits and the cost of membership in a monetary union and compared with the official criteria of joining EMU. However, twenty years of the EMUs existence have not resulted in a significant shift towards convergence. A lack of homogeneity respectively insufficient real convergence within Eurozone is considered as a high risk of a successful and smooth euro area functioning. Nominal convergence and real convergence are analyzed for non-members of monetary union as Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania and Sweden. None of above mentioned countries meets the basic official requirements for joining EMU although for different reasons. It is assumed that the countries as Bulgaria and Romania would further deepen the divergent tendencies in the euro area and therefore their admission are rather questionable and contradictory. To sum up, the enlargement of the euro area in the medium-term is unrealistic taking into account the nominal and real convergence parameters.

# Convergence of International Investment Law and Human Rights: The Curious Case of Social Impact Investments in the Philippines

<sup>1\*</sup>Hanna Keila Garcia, <sup>2</sup>Hannah Isabella P. Chan

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**Keywords:** Rapplers License, Pump Irrigation Project, Urbaser v Argentina

Existing international investment treaties rarely include provisions that address the protection of human rights. While there are instances wherein remedies are being sought for human rights violations committed as a direct result of foreign investments, such violations are nonetheless deemed separate issues; requiring separate, and oftentimes legally tedious processes, despite the inclusion of arbitration clauses in investment agreements. The rapid growth of the social impact investment industry (now estimated to be worth USD228 Billion) reflects a merging of human rights and market for the purpose of generating measurable social and development impacts while ensuring returns on investment. At the heels of the decision made in *Urbaser v Argentina*, it is proposed that social impact investing creates a unique opportunity to craft a rights-based business model that ensures that any party, even the government, can be held accountable for investments that result in human rights violations. This is significant in the case of the Philippines, where the weak normative function of human rights can benefit from mechanisms directly protecting such rights. If applied to government contracts, a rights-based business model could have compelled a shift in the Philippine Government's attitude in evaluating loan agreements for development projects, such as the Kaliwa Dam and the Chico River Pump Irrigation Project. This model of social impact investing could have bolstered the position of news media Rappler and its impact investor, Omidyar Network, when Rapplers License was revoked by the Philippine government in retaliation to the relentless reporting on the ongoing war on drugs. The question must be asked how various stakeholders can exact accountability not just within the realm of international human rights, but also as an adjunct of international investment law. Social impact investing, as a rapidly growing emergent field of business, presents a first step to answering this.

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## Creating a Dynamic Difficulty Adjustable Game for Elderly People

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**Keywords:** Dynamic Difficulty Adjustment (DDA), Sarcopenia, Elderly People

The purpose of this pilot study is to develop a game for elder people to against sarcopenia. Sarcopenia is a situation characterized by loss of skeletal muscle mass, quality, and strength associated with aging. To maintain skeletal muscle mass and function, undertaking physical activities and excise with the game is the effective approach for elder people. The improper of game difficulty may affect elder peoples motivation to continue the game. To investigate how dynamic game difficulty adjustment affecting elderly peoples motivation, this pilot study is creating a dynamic difficulty adjustable game Fruitcollector with a wearable detective device. According to the results of observing how people ride bicycles, the wearable detective devices buttons, pressure and infrared sensors can receive and analysis data from players. Fruitcollector is a digital game with dynamic difficulty adjustment (DDA) by riding spinning bike. The goal of player is to collect fruits by riding spinning bike and using the wearable detective device. The game difficulty will be adjusted according to the players performance. For further investigation and evaluation, elderly participants will be invited to play the game.

***TRACK B***

***ENGINEERING, TECHNOLOGY & APPLIED SCIENCES***



# Reversible Data Hiding Based on Multi-Dimension Difference-Histogram and Bilinear Interpolation

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**Keywords:** Reversible Data Hiding, Histogram Shifting, Multi-Dimension

A new difference-histogram modification reversible data hiding scheme by using bilinear interpolation prediction is proposed in this paper. First, the proposed method considers each neighboring pixels  $x$  and  $y$  to predict  $z$  by bilinear interpolation on four pixels which are near to pixel-pairs  $x$  and  $y$ . Then, according to  $d_1=x-y$ ,  $d_2=y-z$ , and  $d_3=z-x$ , a new coordinate system  $(d_1, d_2, d_3)$  is generated. In this three-dimensional coordinate, the proposed method uses six quadrants to embed secret information: points on the specified surface are used for embedding and the extending space surrounded the embedded surfaces are used for shifting. Finally, a new multi-dimension difference-pair-mapping is used to implement the reversible data embedding. Therefore, more embedding conditions are obtained, thereby increase the number of embedded pixels and get more embedding capacity.

## ***UP COMING EVENTS***

You can find the details regarding our upcoming events by following below:

<http://esrdb.com/conferences/cetas-2019/>

<http://esrdb.com/conferences/sdcit-sep-2019/>

<http://esrdb.com/conferences/itcea-2019/>

<http://esrdb.com/conferences/citas-nov-2019/>

<http://esrdb.com/conferences/aecit-dec-2019/>

## Vision

Invests in creation of 21st century engineers and discovery of technologies through transformational center-based research, research in education and inclusion, and research opportunities for students and teachers.

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