# Proceedings
# of

# 6th International Multi-Topic Conference on Engineering and Science (IMCES)

## 05-07 July 2023

## Faculty of Information Technology, YARSI University, Jakarta, Indonesia

Proceeding Editors:

Bishwajeet Pandey, Ummi Azizah Rachmawati, Vladimir Ivanov

# Chair Message

As a chair, we have the honor to welcome you with great respect and enthusiasm to the 6th International Multi-Topic Conference on Engineering and Science (IMCES) to be held in Hybrid Mode on 05-07 July 2023 (ONLINE for participant who unable to come to Indonesia). IMCES'2023 intended to attract innovative technical and scientific work in the field of science, technology and engineering. The response to the conference was overwhelming and we are proud to state that we have received really good quality contributions and we are sure as a participant you will share the same sentiment. All accepted papers will be submitted to either SCOPUS/WOS-ESCI Index Journal (see list on conference website) or only in conference proceeding, based on registration and hopefully these papers will be available online by end of 2023.

As a chair and on behalf of the organizing committee, we are extremely happy to host you at Indonesia and we are working to provide you a memorable hospitality as you are coming from different parts of the world to share and contribute in the areas of their expertise. We hope to provide a good platform to the participants, where not only they meet and share their vision, ideas but also fertilize their thoughts in the ever-growing area of computer science and electronics engineering technologies. We are also confident that our keynote speakers will be able to enrich your knowledge during the conference.

It is the 27th conference hosted by Gyancity Research Consultancy in association with partner university across the globes, next two conference in 2023-2024 are following:

9th International Conference on Green Computing and Engineering Technologies (ICGCET)
27 - 28 September 2023, Radisson Blu Hotel Waterfront, Cape Town, South Africa,
https://icgcet.org/

9th International Conference on Recent Trends in Computer Science and Electronics (RTCSE ®)
January 3-5, 2024, University of Hawaii, Manoa 2520 Correa Road, Hawaii, USA
https://rtcse.org/

Best wishes.
**Dr Ummi Azizah Rachmawati**, Yarsi University, Jakarta, Indonesia
**Dr Bishwajeet Pandey,** Gyancity Research Consultancy, India

Tel/Whatsapp:                    +91-7428640820,                    (+45)-61515463
Email: dr.pandey@ieee.org, ummi.azizah@yarsi.ac.id

# IMCES'2023 Schedule

# 5  July 2023

**09:00-10:00 AM** (Jakarta Time)
- **Inaugural Speech: General Chair Prof Dr. Ummi Azizah Rachmawati, Yarsi University, Indonesia**
- **Keynote Speech: Dr Geetha G, Jain University, Bangalore, India**

**10:00-11:00** (Jakarta Time)
- **Session 1**:  Chair: **Dr. Bishwajeet Pandey, Jain Deemed To Be University, Bangalore, India**
- Paper Id: 389, 2468

**11:00-13:00 PM** (Jakarta Time)
- Satellite Session @ Gyancity Research Consultancy, India
- Zoom Meeting Link:
- https://zoom.us/j/98502221241?pwd=RlM0aS9pc1VKd2lHa3dFMWQwM29rQT09
- Meeting ID: 985 0222 1241
- Passcode: 2222
- Paper Id:  724, 922, 1529, 1614, 2051, 2892, 3585, 3624, 4634, 4804, 5485, 6709, 7180, 9210, 7119, 7386, 7427, 8643, 9802
- Chaired by **Dr Sri Chusri Haryanti, Yarsi University, Indonesia**

**13:00-13:30** (Jakarta Time)

- **Keynote Speech: Dr M K Hasan, UKM, Malaysia**

**13:30-15:00 PM** LUNCH

# 6 July 2023

**9:00-12:00** (Jakarta Time)
- **Session 2:** Chair: **Prof Dr Vladimir Ivanov, Herzen State Pedagogical University, St Petersburg, Russia**
- Paper Id: 330,  997, 1624, 2093, 3855, 3940, 4101, 4122, 4739, 5915, 6864

# 7 July 2023

# Academic Tour to YARSI University

# ICGCET'2015: 1st International Conference of Gyancity at Dubai, UAE

ICGCET'2015: 1st International Conference of Gyancity at Dubai, UAE

# RTCSE'16: 2nd International Conference of Gyancity at Kuala Lumpur, Malaysia

# ICGCET'2016: 3rd International Conference of Gyancity at Aalborg University, Esbjerg, Denmark



## Institut i Esbjerg samler forskere fra hele verden

DEL  f  🐦  Af Edmund Jacobsen 15. august 2016 kl. 05:31

40 forskere og studerende fra hele verden samles på Institut for Energiteknik, Aalborg Universitet Esbjerg, i tre dage i denne uge, når der afvikles en international konference, der handler om at gøre computerteknologi mere grøn.

D.M. Akbar Hussain, lektor ved Institut for Energiteknik på Aalborg Universitet Esbjerg, har sammen med en kollega fra Indien arrangeret konferencen International Conference on Green Computing and Engineering Technologies.

Det er planen, at disse konferencer skal afvikles i Esbjerg hvert andet år – ganske enkelt fordi Institut for Energiteknik i Esbjerg er internationalt anerkendt.

# RTCSE'17: 4th International Conference of Gyancity at Kuala Lumpur, Malaysia

# IMCES'17: 5<sup>th</sup> International Conference of Gyancity at Kuala Lumpur, Malaysia

# ICGCET'2018: 6<sup>th</sup> International Conference of Gyancity at Limerick, Ireland

# RTCSE'2018: 7th International Conference of Gyancity at Bangkok, Thailand

# ICGCET'18: 8th International Conference of Gyancity at Aalborg University, Esbjerg, Denmark

# RTCSE'2019: 9th International Conference of Gyancity at Univeristy of Hawaii, USA

# IMCES'2019:10th International Conference of Gyancity at Port Louis, Mauritius

# ICGCET'2019: 11th International Conference of Gyancity at Casablanca, Morocco

# RTCSE'2020: 12th International Conference of Gyancity at University of Hawaii, USA

# IMCES'2020: 13th International Conference by Gyancity at Jakarta, Indonesia

# ICGCET'2020: 14th Conference by Gyancity at St Petersburg, Russia



Jammu, September 18: Dr. Amit Kant Pandit, Faculty, SoECE, SMVDU chaired an online session in 6th International Conference on Green Computing and Engineering Technologies (ICGCET®).

The international conference is scheduled from 16th-18th September 2020 at Herzen State Pedagogical University, St Petersburg, Russia. The traditional face-to-face meeting was replaced by the online meeting due to a pandemic situation. The first online session was conducted through CISCO WebEx app.

Dr. Pandit along with co-chair Dr. Bishwajeet Pandey, Birla Institute of Applied Sciences, Bhimtal Uttarakhand, and associated with Gyancity Research consultancy conducted the first session and an introductory talk.

The attendees across the world presented their work through an online meeting and recorded video presentations. The presentation and other videos are uploaded for public viewing on YouTube channel for wider academic sharing.

The convener of the conference Prof. Jason Levy, University of Hawaii, USA. Prof. Geetam S Tomar, Director Birla Institute of Applied Sciences, Bhimtal, India, congratulated on the successful organizing of the session.

Dr. Amit Kant Pandit thanked coordinators for arranging such academic meetings in difficult times.



**SMVDU Faculty chairs Online Session at 6th International Conference on ICGCET**

JAMMU BULLETIN NEWS
KATRA, SEP 18:

Dr Amit Kant Pandit, Faculty, SoECE, SMVDU chaired an online session in 6th International Conference on Green Computing and Engineering Technologies (ICGCET®) today.The international conference is scheduled from 16th-18th September 2020 at Herzen State Pedagogical University, St Petersburg, Russia. The traditional face-to-face meeting was replaced by the online meeting due to a pandemic situation. The first online session was conducted through CISCO WebEx app.Dr. Pandit along with co-chair Dr. Bishwajeet Pandey, Birla Institute of Applied Sciences, Bhimtal Uttarakhand, and associated with Gyancity Research consultancy conducted the first session and an introductory talk. The attendees across the world presented their work through an online meeting and recorded video presentations. The presentation and other videos are uploaded for public viewing on YouTube channel for wider academic sharing.The convener of the conference Prof. Jason Levy, University of Hawaii, USA. Prof. Geetam S Tomar, Director Birla Institute of Applied Sciences, Bhimtal, India, congratulated on the successful organizing of the session. Dr. Amit Kant Pandit thanked coordinators for arranging such academic meetings in difficult times.
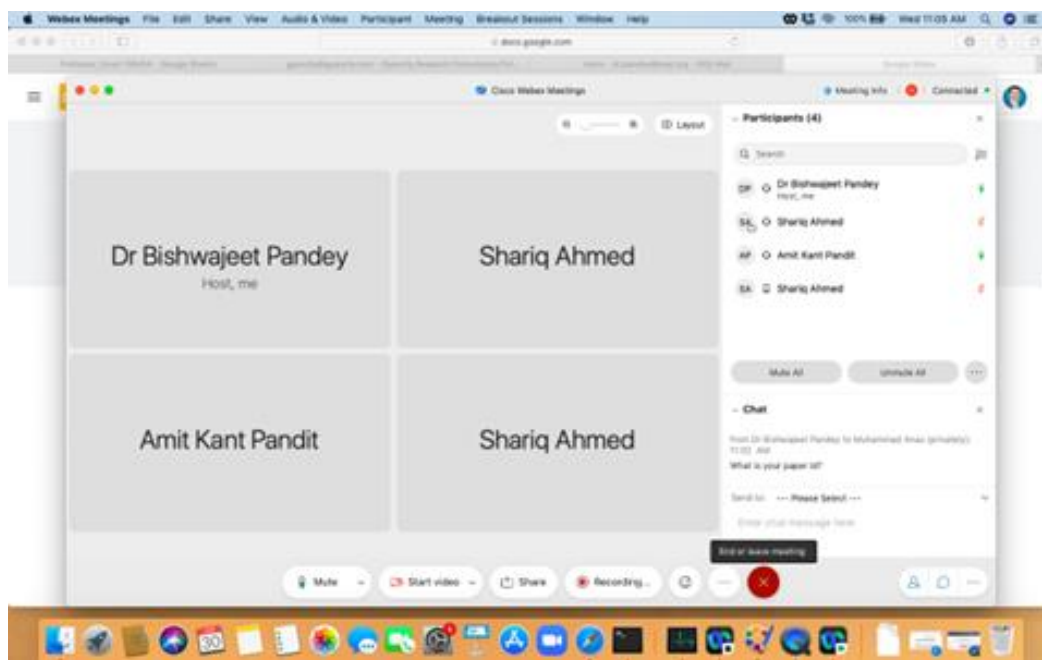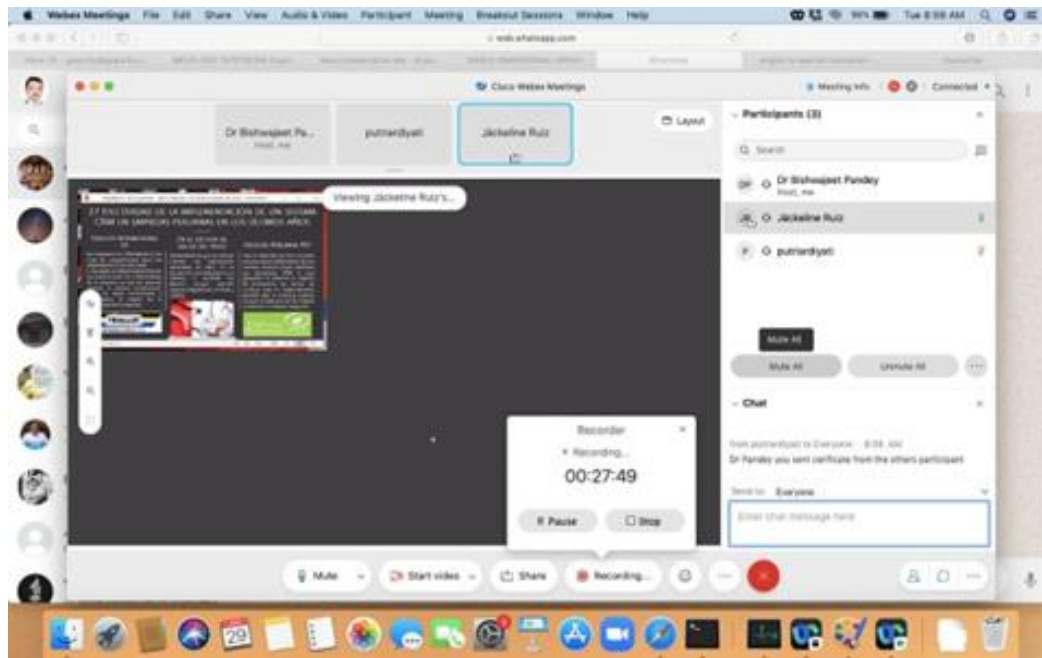
# RTCSE'2021: 15th International Conference of Gyancity at University of Hawaii, USA
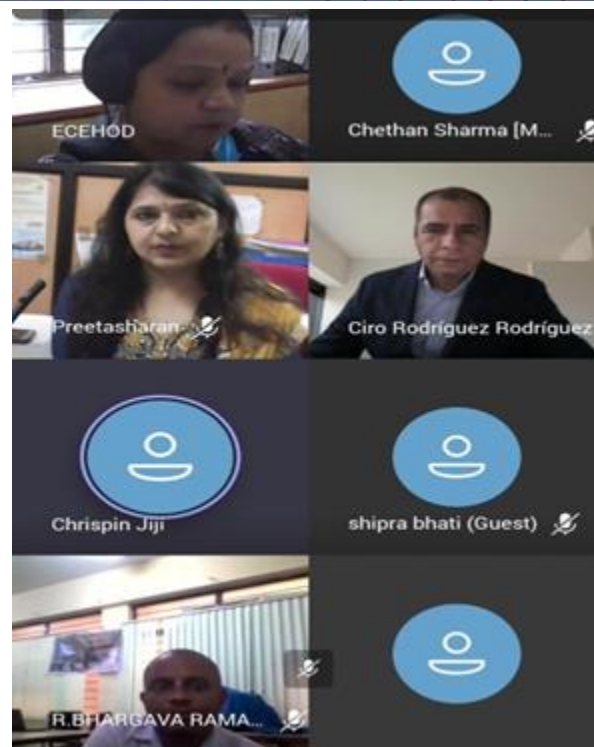
# BMESS'2021: 16th Virtual Conference by Gyancity

# IMCES'2021: 17th International Conference by Gyancity at Yarsi University, Indonesia

# ICGCET'2021: 18th International Conference by Gyancity at National University of Federico Villareal, Lima, Peru

Evento se dará el 22 y 23 de septiembre. Foto: difusión

**La República**
larepublica_pe
ediciondigital@glr.pe

16 Set 2021 | 12:40 h
Actualizado el 16 de Setiembre 2021 | 12:40 h

Este 22 y 23 de septiembre se realizará la 7ª Conferencia Internacional sobre Tecnologías de Ingeniería y Computación Ecológicas 2021 (ICGCET-2021) y la 13ª Conferencia Internacional en Inteligencia Computacional y Redes de Comunicación 2021 (CICN 2021), eventos que tendrán como sede a la Universidad Villareal (UNFV).

Juan Alfaro, rector de la UNFV, será el encargado de inaugurar los referidos certámenes, el miércoles 22 a las 10.00 a. m. Previamente, Akbar Hussain, de la Universidad Aalborg de Dinamarca, será el encargado de brindar las palabras de bienvenida.

La ICGCET-2021 presentará las investigaciones de diferentes áreas de la ciencia y la tecnología, y proporcionará una plataforma para que investigadores y científicos de todo el mundo intercambien y compartan sus experiencias y resultados de investigación.

**La República**

ÚLTIMAS NOTICIAS    POLÍTICA    ECONOMÍA    SOCIEDAD    MUNDO    DEPORTES    ESPECTÁCULOS    RED

EN VIVO - Emmy 2021: sigue aquí la premiación a lo mejor de la TV y el streaming

NOTAS DE PRENSA

## Conferencias internacionales se desarrollarán en Universidad Villarreal

Cada evento contará con la participación de destacados expertos de la investigación.

7th International Conference on Green Computing and Engineering Technologies
(ICGCET®)
22–23 September 2021
Universidad Nacional Federico Villareal (National University of Federico Villareal), Lima, Perú

# ICGCET'2021: 18th International Conference by Gyancity at National University of Federico Villareal, Lima, Peru

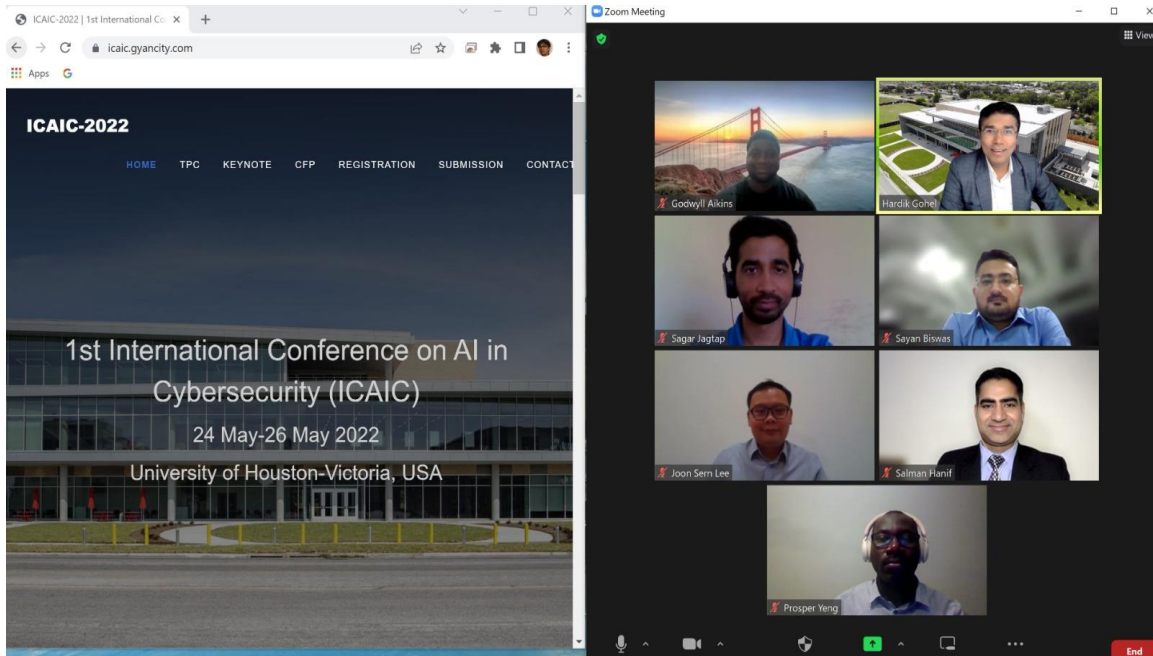# RTCSE'2022: 19th International Conference of Gyancity at University of Hawaii USA

# BMESS'2022: 20th International Conference by Gyancity at Bath Spa University UAE

# ICAIC'2022: 21st International Conference by Gyancity at University of Houston-Victoria, USA

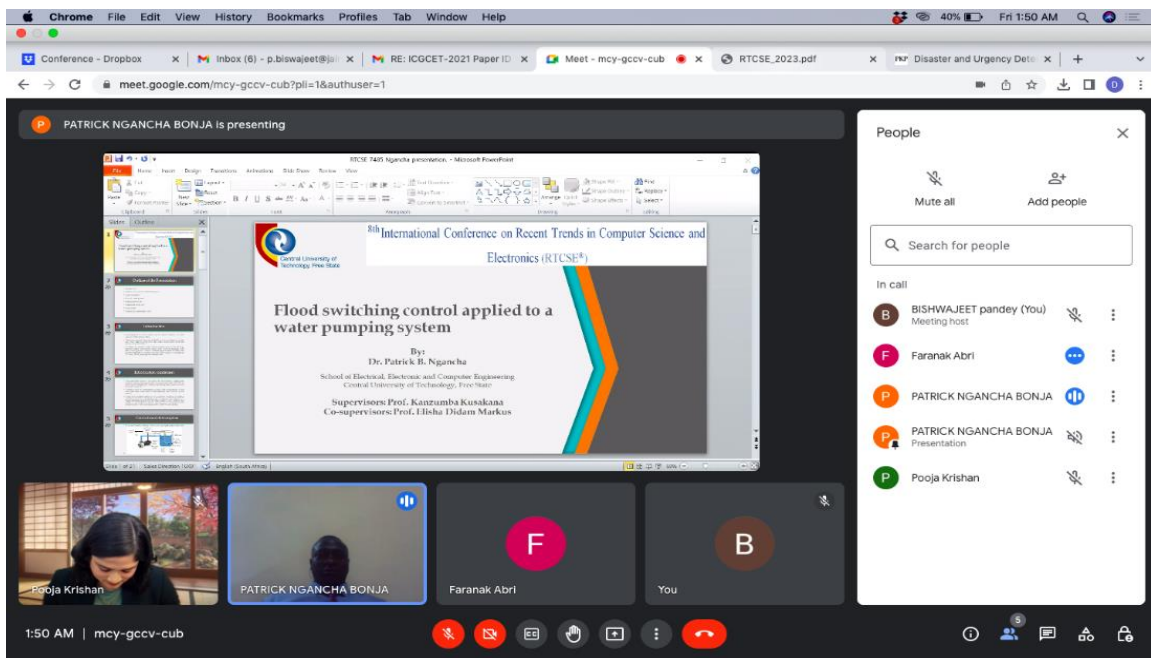# IMCES'2022 GROUP PHOTO: 22nd International Conference of Gyancity at Aalborg University, Denmark

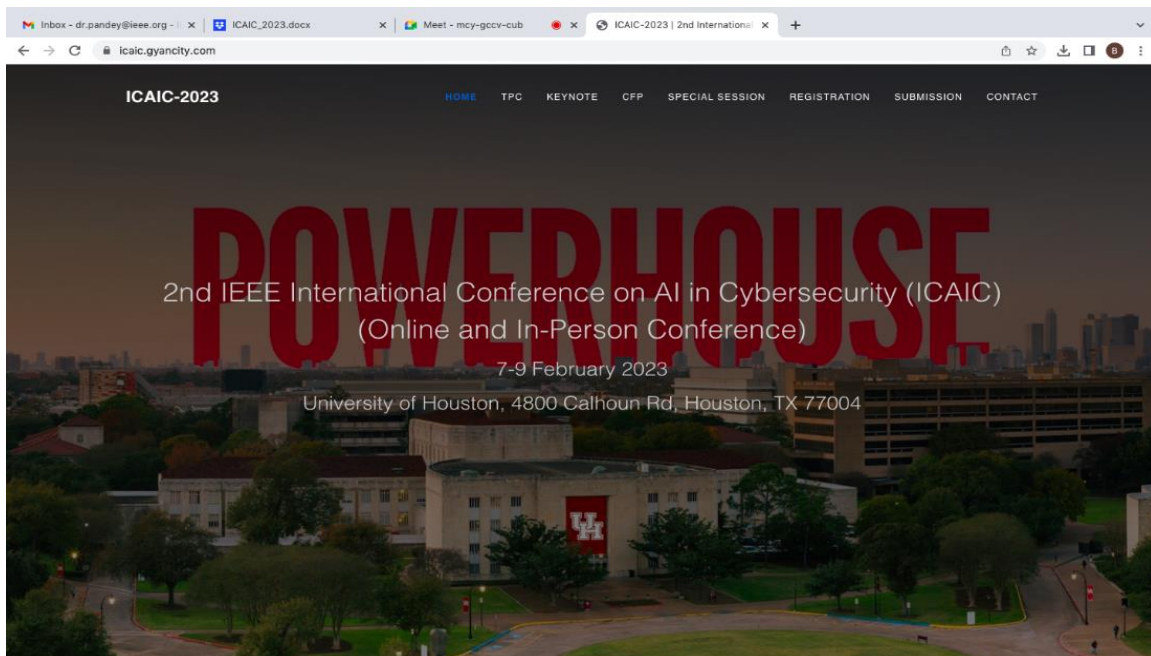# ICGCET'2022 GROUP PHOTO: 23r<sup>d</sup> International Conference of Gyancity at Mauritius

# RTCSE'2023 GROUP PHOTO: 24th International Conference of Gyancity at University of Hawaii USA

# ICAIC'2023 GROUP PHOTO: 25th International Conference of Gyancity at University of Houston-Victoria, USA

# BMESS'2023 GROUP PHOTO: 26th International Conference of Gyancity at Bath Spa University, UAE

# Abstract of Paper Accepted in IMCES'2023

| 0389 | ## Life Cycle Prediction on Heavy Equipment: A Systematic Literature Review |
|---|---|

Anggi Febrianto, Mokh. Suef, Muhammad Saiful Hakim
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**ABSTRACT**

The heavy equipment industry is one of the supporting commodities in the fields of infrastructure development, agricultural development, mineral mining and coal mining. the heavy equipment industry in Indonesia continues to grow by recording sales in 2020 of 5,393 units and an increase in 2021 of 14,706 units or an increase of 172% [1]. From the pre-survey that we conducted, 24% of owners did not know when the unit would decline and when to buy a new unit. Purpose Main purpose this paper to make a literature review study to identify concepts and methods to predict the life cycle of heavy equipment in supporting the owner's decision. Method To identify concepts and methods to predict the life cycle of heavy equipment Articles were reviewed using a systematic literature review with data from ScienceDirect. Result Result in this study presents data analysis from 7811 articles on life cycle prediction that have been analyzed using vosviewer software as well as descriptive analysis from 427 relevant articles on heavy equipment life cycle. Conclusion Conclusion of this study provides a perspective on research conducted on heavy equipment life cycle predictions which results in an important note that no one has discussed heavy equipment investment decision making by considering heavy equipment life cycle predictions comprehensively.

**Keywords:** Systematic Literature Review, Life Cycle Prediction, Heavy Equipment, Decision making, Investment.

# Abstract of Paper Accepted in IMCES'2023

<table>
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<td>724</td>
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## Augmented Reality Navigation in Surgery: Concepts, Methods and Limitations

**Vladimir M. Ivanov[1], Andrew Madaliev[2], Anton M. Krivtso[2], Sergei Strelkov[3]**

[1]Russia, Saint-Petersburg, Herzen State University, Russia
[2]Russia, Saint-Petersburg, Peter the Great St. Petersburg Polytechnic University, Russia
[3]Melbourne, Torrens University, Australia

### ABSTRACT

**Introduction** Despite the growing number of studies in the field of augmented reality navigation in surgery, existing and promising approaches have yet to receive a comprehensive systematization, and there is no generally accepted terminology. This paper aims to fill these academic gaps.

**Materials and Methods** Following the PRISMA guidelines, using the ScienceDirect, MDPI, PubMed databases, citation searching and previous research, the 42 most relevant and cited publications were selected for the review.

**Results** As a result, the main stages of the AR surgery workflow were highlighted: medical image acquisition, patient-specific 3D surface modelling, registration and tracking. Four main categories of AR data visualization devices in surgery were systematized. The surgical navigation methods were categorized into two main groups: marker-based (visible light optical and infrared optical, electromagnetic and ultrasonic) and markerless. For each method, application peculiarities were determined. Common limitations and challenges of AR navigation in surgery have been described: equipment imperfection, cost increase, perceptual errors, lack of standards and other issues.

**Conclusions** The proposed comprehensive classification of AR navigation approaches in medicine, and consistent terminology will facilitate the standardization process and simplify the development process for other researchers.

**Keywords:** augmented reality, mixed reality, surgical navigation, patient registration, tracking, optical navigation, electromagnetic navigation, ultrasonic navigation, markerless navigation, anatomical features.

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# Abstract of Paper Accepted in IMCES'2023

| 922 | |
|---|---|
| | ## Professional Learning Communities as a Means to Strengthen Teacher Performance: A Systematic Review |

Tania Espinoza Perez, Rosa Huaraca Aparco
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**ABSTRACT**

Professional learning communities are recognized for their role in teacher performance. The objective of this article is to review the literature on professional learning communities as a strategy to enhance teaching activities in educational institutions, in journals included in the Scopus, Scielo, Ebsco and Sciencia Direct databases from 2019 to 2021. The PRISMA method was used in this research and the inclusion and exclusion criteria were taken into account. A data table was used to collect the information. Results: After using the PRISMA flowchart, a sample of 40 original articles was obtained, indicating that professional learning communities use strategies to improve teacher performance and, consequently, improve student performance, in CPAs the teacher is the key to improving educational practice. This requires a change in the strategies used, a slow and costly process in work and effort, but in the review carried out, working together plays an important role in the CPAs to reinforce teacher performance.

**Keywords:** Professional Learning Communities, Teacher Performance

# Abstract of Paper Accepted in IMCES'2023

| 1529 | |
|---|---|

## Cyberbullying in high school students.
## Systematic review

**Carolina Milagros Ferreyra-Quispe, Juan Julio Espejo-Yupanqui, Juan Mendez-Vergaray, Edward Flores**

Cesar Vallejo University, Lima, Peru
carolina_ferreyra10@hotmail.com, julio_espejo@hotmail.com, jmvevaluaciones@hotmail.com, eflores@unfv.edu.pe

### ABSTRACT

This systematic review aimed to identify studies that address Cyberbullying, such as trolling, Fleming and Sexting in secondary students. The review was framed in the PRISMA protocol, the exploration of the information was done in English, using the Scopus search engine, with the search equations: Ciberbullying AND High School Students, Ciberbullyng AND Trolling, Ciberbullyng AND Fleming, Ciberbullyng AND Sexting. 1170 scientific writings were identified, 686 were screened after eliminating duplicates, 484 were selected of which 388 were excluded for not keeping agreement with the title, keywords and abstract. We chose 96 full-text articles, separating 64 for not meeting the inclusion criteria, of which 32 were written that were included for review based on the inclusion and exclusion criteria. The search period was June-August 2022; The information collected was entered into a data matrix. The results indicate that Trolling and Fleming are favored by the use of cyberbullies from cyberspace to humiliate and intimidate their cybervictims; on the other hand, Sexting shows that students exchange sexual images in order to intimidate and culminate in sextortion.

**Keywords:** Cyberbullying; Fleming; Sexting; Trolling

# Abstract of Paper Accepted in IMCES'2023

1614

## Intimate Partner Violence in College Students: A Systematic Review of Studies Based on the Higher Education Population

**Maribell Xiomara Bejar Alegría[1], Mario Humberto Taipe[2] Cancho, Graciela Esmeralda Carranza León[3], Carmen Liucia Soriano Alva[4], Julio Cesar Machaca Mamani[5], Rosa Gabriela Coral Surco[6]**
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### ABSTRACT

Intimate partner violence has previously been recognized as a major public health problem. A lack of knowledge and awareness about the teaching and learning of intimate partner violence has been identified in the curricula of different faculties of universities. This comprehensive systematic review aims to characterize existing research on actual or suspected infidelity with intimate partner violence and inform future research and programs. We systematically searched databases Scopus, SciELO, Web of Science, Dialnet, peer-reviewed research, published between April 2017 and 2022, that provided data on prevalence or a measure of association (quantitative) or pathway (qualitative), between actual or suspected infidelity. We included 38 articles from 28 countries and evidence showed a consistent association between actual or suspected infidelity. Our findings identify three general mechanisms and six pathways between infidelity, considered as intimate partner violence in college students. These provide support for leading theories in the field related to patriarchal culture, threatened masculinities and femininities, and lack of emotional regulation and conflict resolution skills, but not evolutionary theories. Our findings suggest that researchers should use standardized measurement tools that distinguish between actual infidelity and suspicions, confirmations, and accusations of infidelity. Policy and programming should aim to transform traditional gender roles, taking into account infidelity and improving communication and partner trust in students. The results of this study may suggest that specific information seminars within the curriculum might be suitable to provide students with

**Keywords:** Intimate partner violence, gender, infidelity, family violence, domestic violence, partner conflicts.

# Abstract of Paper Accepted in IMCES'2023

| 2051 | |
|---|---|
| | ## Influence of burnout syndrome on the digital skills of EU teachers |

**Johnny Fernando Quiñones Jáuregui**

Universidad Cesar Vallejo, Lima, Perú.
*jfquinonesq@ucvvirtual.edu.pe*

### ABSTRACT

For teachers, the ability and dexterity in the use of digital skills is an important aspect in the prevention of burnout syndrome. The study aimed to determine the influence of Burnout syndrome on the digital skills of teachers at private universities in Lima, Peru. The research was quantitative or with a cross-sectional and prospective design. The instrument was applied to a sample of 269 professors from a private university, an inferential analysis was applied by kolmogorov-Smirnov. The results show that the Burnout syndrome in teachers revealed that most of them presented low levels of emotional exhaustion with 52.0% of the total respondents, while in the dimension of depersonalization presented a greater number of teachers with high levels of 50.6%. On the other hand, most of the teachers evaluated presented a low level of personal fulfillment. In conclusion, the three dimensions evaluated, emotional exhaustion and personal fulfillment were the most affected in the teachers evaluated.

**Keywords:** Digital skills, Burnout syndrome, university teachers, depersonalization.

# Abstract of Paper Accepted in IMCES'2023

| 2468 | ## LabVIEW-enabled Wireless Distance Measurement for Railways using Phase Shift Analysis |
|---|---|

Rohit Kumar, T V Raman, R K Mohanty

School of Computer Science and Engineering, Jain University, Bangalore, India

**ABSTRACT**

Railways still use ring token-based systems to schedule the trains on tracks, leading to inefficient use of tracks. In this work, we have implemented distance measurement using phase shift in a wireless network for railways, aiming to calculate the distance of a locomotive from the host station. This technique leverages LabVIEW as the programming environment to acquire and analyze wireless signals between nodes. The dynamic nature of the nodes introduces additional complexities as their positions change over time. The process involves setting up the required hardware components (USRP 2901), synchronizing the transmitters and receivers, and acquiring the wireless signals. LabVIEW is then utilized to process the signals, extract the phase shift information, and estimate the distance based on the calibrated mapping between phase shift and distance. The calculated distances between the dynamic nodes are continuously updated as their positions change. The results can be displayed in real-time using LabVIEW's user interface capabilities and further utilized for railway applications. Careful consideration must be given to signal propagation, environmental factors, and synchronization to ensure accurate and reliable distance measurements in this dynamic scenario.

# Abstract of Paper Accepted in IMCES'2023

| 2892 | *Applications of Deep Neural Network for Human Activity Recognition* |
|---|---|

**\*Sunanda Das, Manisha, Bishwajeet Pandey, Geetha G**

Department of Cyber Security, School of Computer Science and Engineering, Jain University, Bangalore, India
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**ABSTRACT**

Human Activity Recognition By using Deep Learning Models on Smartphones and Smart watches Sensor Data. Human Activity popularity is currently implemented in various fields wherein in treasured facts about a individual's useful potential and manner of life is needed. Human activity popularity (HAR) hobbies sports activities from a series of observations at the movements of subjects and the environmental conditions. Human Activity Recognition (HAR) refers to the automatic detection of sports finished by means of humans in their each day lives. A HAR tool lets in sports finished thru someone and provide informative feedback for invention. Human pastime reputation (HAR) is growing in popularity due to its big-ranging programs in patient rehabilitation and motion issues. HAR generally start with gathering sensor data for the sports activities attention and then expand algorithms the usage of the dataset. Activity reputation pursuits to recognize the actions and dreams of one or more marketers from a sequence of observations at the sellers' movements and the environmental conditions. Deep getting to know is a type of gadget gaining knowledge of and artificial intelligence (AI) that imitates the manner human beings gain effective types of information. While conventional machine gaining knowledge of knowledge of algorithms are linear, deep mastering algorithms are a hierarchy of growing complexity and abstraction. Human sports are the various moves for activity, dwelling, or necessity finished by human beings. For example it consists of enjoyment, amusement, industry, activity, conflict, and exercise. All sports which is probably performed through the humans for his or her residing, income motive, entertainment, intellectual peace, are referred to as human sports activities. It consists of enjoyment, entertainment, industry, task etc. Machine learning is an software program of artificial intelligence (AI) that gives structures the capacity to analyze and enhance with out being explicitly programmed.

**Keywords:** Human Activity Recognition, entertainment, artificial intelligence, Deep learning.

# Abstract of Paper Accepted in IMCES'2023

4634

## *Psychological impact of sexual abuse in minors: a systematic review*

**Graciela Esmeralda Carranza Leon[1], Hugo Martin Noe Grijalva[2]**
*[1,2]Cesar Vallejo University, Lima, Peru*
*rhuaraca@unajma.edu.pe*

**ABSTRACT**

This article is a systematic review about child sexual abuse, during the last decade, it has been increasing year after year having an impact on socio-emotional and cognitive development; however, a decrease in reported cases was observed, due to the state of health alert decreed worldwide by the COVID-19 pandemic. However, the studies that record the impact of this problem do not go at that rate of growth, even more there are few updated longitudinal studies that reveal this impact. Objective. Carry out a review of articles between 2016 and 2022 related to the impact of child sexual abuse on children under 18 years of age. Method. The prism format was used and the database was used as SCOPUS, SCIELO and WEB OF SCIENCE. Results. 11 articles were admitted, whose authors indicate that those people who suffered this type of abuse suffered or are suffering an alteration in their biological, psychological and social development, being sociodemographic factors protective or risk agents for incidence as for recovery. Conclusions. At present there is a deficit of updated studies on the impact of sexual abuse on children under 18 years of age, being a need to train health professionals, educators, among others for detection and recuperative intervention for this age group.

*Keywords:* Psychological Impact, Sexual Violence, Human Lif*e*

# Abstract of Paper Accepted in IMCES'2023

| 4804 | |
|---|---|

## Quantifying the percentage of shading on a PV module and its subsequent impact on its output power

Arthur J Swart[1] and Pierre E Hertzog[2]

[1,2]Department of Electrical, Electronics and Computer Engineering Central University of Technology, Private BagX20539, Bloemfontein, South Africa

aswart@cut.ac.za, phertzog@cut.ac.za

### ABSTRACT

The output power of any PV module may be influenced by a number of factors, including the installation and environmental conditions. One of these conditions involve partial shading, where a section of a PV module is shaded due to an interruption in the direct-beam radiation from the sun. The purpose of this article is to quantify the percentage of partial shading of a given PV module within a controlled environment, correlating it to its output power. This correlation helps to reinforce the importance of allowing no shading to occur on a PV module or array. The percentage of partial shading is determined using images taken of a 10 W PV module that are processed using online imaging software. Results indicate that a partial shading percentage of 4,7 % caused by a vertical aluminum tube results in an output power reduction of 59 %. However, the results are limited to a specific string design of a PV module and to the position of the partially shaded cell. It is recommended to remove all causes of partial shading, as this impacts on current and future power generation from the PV module.

**Keywords:** surface; image software; direct-beam radiation

# Abstract of Paper Accepted in IMCES'2023

| 7180 | Use of digital media for teaching in distance education |
|---|---|
| | Sandra Paola Tello Peramas, Lenny Giovanna Herrera Sandoval, Juan José Tello Peramas, Rosa Huaraca Aparco<br><br>Universidad Cesar Vallejo, Lima, Perú<br><br>stello@ucvvirtual.edu.pe, lherrera@ucvvirtual.edu.pe, jtello@ucvvirtual.edu.pe, rhuaraca@unajma.edu.pe<br><br>**ABSTRACT**<br>The work consists of obtaining information from studies carried out on digital education; as an aspect of the work, the cases of various countries in their adaptation to the distance learning system have been obtained. In most of the works, reference is made to the difficulties in adapting to the new system, it has been a problem for the educational community and government authorities trying as far as possible not to lose the school year. The digital resources were the fundamental element for the educational community, overcoming a great number of difficulties, to be able to continue with the teachings; although all had difficulties, the most affected level was the initial education, but also the last year of primary and secondary education. It is possible that in 2022 it - will be possible to return to blended or face-to-face education, but digital education will continue to be a fundamental element at all educational levels.<br><br>**Keywords**: Educational community, digital technology, COVID 19, digital media. |

# Abstract of Paper Accepted in IMCES'2023

8643

## Efficient Convolutional Neural Network Based Side Channel Attacks Based on AES Cryptography

Amjed Abbas Ahmed[1,2] and Mohammad Kamrul Hasan[1], Azana Hafizah Mohd Aman[1], Shayla Islam[1]

[1]Center for Cyber Security, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Selangor 43600, Malaysia
[2]Department of Computer Techniques Engineering, Imam Al-Kadhum College (IKC), Baghdad, Iraq
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**ABSTRACT**

In recent years, profiled side-channel attacks have emerged as a particularly potent kind of side channel attack that can be used to circumvent the security of cryptographic equipment. Convolution neural networks (CNNs) have been widely used as deep learning infrastructure pertaining to attack in recent research that have examined a new kind of profiled attack based on deep learning. Attack effectiveness will be highly effected through design of CNN's. But image recognition fields are frequently the foundation of the CNN architecture that is currently being used for profiled attacks. Additionally, it is still challenging to choose proper parameters and CNN infrastructure concerning adaptation to profiled assault types. Within current study, an effective CNN-based profiled attack was suggested by us, that can be used against maskingprotected cryptographic devices. The Grey Wolf Optimization (GWO) approach is used to obtain the CNN architecture's parameters that are proposed in this research. These parameters are determined by the characteristics of interesting areas on the power trace. The proposed attacks were tested using experiments over tracing set gathered out of a smart card Atmega8515 processing the ASCAD public dataset.

**Keywords:** Power analysis, Side channel attack, Deep learning, CNN, Hyperparameters, Optimization.

# Abstract of Paper Accepted in IMCES'2023

| 9210 | ## IoT, Cloud and AI Enable Sensor Based Water Monitoring To Handle Water Crisis in Indian Cities |
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**ABSTRACT**

The internet is the greatest innovation of this era. The innovation of the internet has revolutionized the planet entirely by bringing the people and machines closer to each other than ever. The recent development in computing and networking technologies brings the next generation of internet which is called as Internet of Things (IoT). As the industrialization and the population are increasing the movement of people towards urbanization is also increasing. Therefore, cities are converting up into smart cities that can be accomplished with the service of the IoT. Water is one of the crucial resources for the existence of human life, so efficient supervision of water systems plays a significant role in smart cities. This paper uses three different modules of smart water management in context to smart cities. In this work three different sensors such as water flow sensor, water temperature sensor, and ultrasonic sensors are used to monitor water consumption. These sensors are interfaced with microcontrollers such as Raspberry Pi and NodeMCU. The sensors data can be observed on the Thing speak cloud server. This system helps in monitoring the leakage of water as well as to control the unnecessary use of water. Also, this module provides data in real-time for each user and that data can be used for monthly billing of water usage. Hence, the consumer will have to pay for the amount of water he/she can use only. Therefore, this model will allow the users to manage the water consumption efficiently.

**Keywords:** IoT, Water Monitoring Water Management, NodeMCU, Raspberry Pi, Smart City, Thing speak, and Sensors.

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