



ICCEFA **2024**

Proceedings of 5th the International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2024)

November 18 - 20, 2024 | Lisbon, Portugal

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WELCOME MESSAGE FROM THE CONFERENCE CHAIR

On behalf of the International Academy of Science, Engineering and Technology (International ASET Inc.), the organizing committee would like to welcome you to The 5th International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2024).

ICCEFA 2024 is aimed to become one of the leading international annual conferences in the fields related to **civil and structural engineering**. This conference will provide excellent opportunities to the scientists, researchers, industrial engineers, and university students to present their research achievements and to develop new collaborations and partnerships with experts in the field.

At **the fifth** meeting of this conference, four keynote speakers will share their expertise to expose participants to a broad range of applications, foster cross-pollination of ideas, and encourage the development of new research interests. Additionally, approximately 17 papers will be presented by professors, students, and researchers from around the world.

We thank you for your participation and contribution to The 5th International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2024). We wish you a very successful and enjoyable experience.

Dr. Mehrab Mehrvar

Toronto Metropolitan University, Canada

Conference Chair

ICCEFA 2024

Dr. Zhi Chen

Concordia University, Canada

Conference Chair

ICCEFA 2024

Dr. Charles Lee

The University of Newcastle, Singapore

Conference Chair

ICCEFA 2024

Dr. Maria Idália da Silva Gomes

Instituto Superior de Engenharia de Lisboa, Portugal

Conference local Chair

ICCEFA 2024

ABOUT ICCEFA 2024

The 5th International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2024) aims to become the leading conference in fields related to Civil Engineering Fundamentals and Applications. The goal of ICCEFA 2024 is to gather scholars from all over the world to present advances in the relevant fields and to foster an environment conducive to exchanging ideas and information. This conference will also provide an ideal environment to develop new collaborations and meet experts on the fundamentals, applications, and products of the mentioned fields.

ICCEFA is an international conference will be held yearly. This conference focus on all aspects Civil Engineering Fundamentals and Applications. ICCEFA Will be held this year as a hybrid conference

- ICCEFA is an acronym for International Conference, on Civil Engineering Fundamentals and Applications.
- The proceedings are published in Ottawa, Canada.
- All papers were peer-reviewed
- The conference proceedings is published under an ISSN and ISBN number
- Each paper is assigned a unique DOI number by [Crossref](#)
- The conference proceedings is indexed by [Google Scholar](#)
- The proceedings is permanently archived in [Portico](#) (one of the largest community-supported digital archives in the world)

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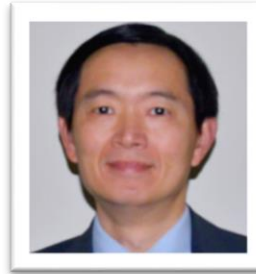
SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the ICCEFA 2024 Conference:



Dr. Mehrab Mehrvar

Toronto Metropolitan University,
Canada
Conference Chair



Dr. Zhi Chen

Concordia University,
Canada
Conference Chair



Dr. Charles Lee

The University of
Newcastle, Singapore
Conference Chair



**Dr. Maria Idália da
Silva Gomes**

Instituto Superior de
Engenharia de Lisboa,
Portugal
Conference Local Chair

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- **Dr. Bilal El-Ariss**, United Arab Emirates University, UAE
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- **Dr. Paulo Jorge Henriques Mendes**, Instituto Superior de Engenharia de Lisboa, Portugal
- **Dr. Saber Moradi**, Ryerson University, Canada
- **Dr. M.Z. Naser**, Clemson University, USA
- **Dr. Grzegorz Sierpiński**, Silesian University of Technology, Poland
- **Dr. Zhu, Xinqun**, University of Technology Sydney, Australia
- **Dr. Maged A. Youssef**, The University of Western Ontario, Canada

KEYNOTE SPEAKERS

The keynote information for the 5th International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2024) is as follows:



Keynote Speaker

Dr. Maria do Carmo Conde

Instituto Superior de Engenharia de Lisboa, Portugal



Keynote Speaker

Dr. Muhammad Shafique

Brunel University London, UK



Keynote Speaker

Dr. Maged A. Youssef

The University of Western Ontario, Canada



Keynote Speaker

Dr. Kamyab Zandi

Director and CEO at Timezyx Inc., Canada/Sweden

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KEYNOTE LECTURE



Title: Influence of Climatic Factors on the Performance of Geotechnical Works

Dr. Maria do Carmo Conde, Instituto Superior de Engenharia de Lisboa, Portugal

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Adjunct Professor at the Department of Civil Engineering at Lisbon School of Engineering. PhD in Civil Engineering in the specialty of Geotechnics from Nova University Lisbon. Her main research interests include thermo-hydro-mechanical behaviour of unsaturated soils, soil-atmosphere interaction, and laboratory characterization of geomaterials. She participated in research projects and has authored and co-authored in national and international conference papers.

KEYNOTE LECTURE



Title: Driving the Future: The Role of Electromobility towards A Net Zero Transportation
Dr. Muhammad Shafique, Brunel University London, UK

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Dr. Muhammad Shafique is currently an Assistant Professor in the Department of Civil & Environmental Engineering, College of Engineering, Design and Physical Sciences at Brunel University London, Since May 2022. Prior to this, he was a Postdoc fellow in the Department of Architecture and Civil Engineering at the City University of Hong Kong. He received his Ph.D. degree in Architecture and Civil Engineering from the City University of Hong Kong and his M.Eng in Smart City and Construction Engineering from the University of Science and Technology, Korea. Dr. Shafique’s research uses life cycle assessment, circular economy, and scenario modeling to identify the environmental problems of emerging products and systems. Historically, our society has taken a reactionary approach to the environment. By proactively understanding the environmental issues of technologies that are still under development, we can identify a greater number of optimal options and innovative solutions to avoid or reduce negative consequences. Shafique works on interdisciplinary topics including sustainable construction and transportation systems, green buildings, building information modeling (BIM), carbon-neutrality, sustainable design of energy systems, advanced fuels, sustainable and smart materials, machine learning, energy, environment & economics nexus, and climate change adaptation.

KEYNOTE LECTURE



Title: Enhancing Seismic Resilience of Reinforced Concrete and Modular Steel Structures Using Shape Memory Alloys

Dr. Maged A. Youssef, The University of Western Ontario, Canada

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Dr. Maged A. Youssef is a Professor at Western University, Canada's Department of Civil and Environmental Engineering. Elsevier consistently recognizes him as one of the top 2% of civil engineering researchers globally. His expertise spans earthquake engineering, structural fire engineering, prefabrication, and modular construction. Dr. Youssef pioneered utilizing Shape Memory Alloys (SMAs) to enhance infrastructure resilience, particularly in response to seismic events and fire hazards. His contributions to the design and optimization of reinforced concrete and modular steel structures have resulted in several patents and numerous high-impact publications in leading journals and conferences.

Throughout his career, Dr. Youssef has been a driving force in bridging the gap between academia and industry, facilitating the application of cutting-edge technologies in real-world settings. His collaborations with international researchers and industry leaders have significantly advanced the development of seismic-resilient structures, and his work continues to shape the future of infrastructure design, particularly in hazard mitigation for buildings and bridges.

KEYNOTE LECTURE



Title: Structural Digital Twins of Structures and Infrastructure

Dr. Kamyab Zandi, Director and CEO at Timezyx Inc., Canada/Sweden

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Dr. Zandi is the Founding Director and CEO of Timezyx (<https://www.timezyx.com/>), a leading firm in the Infrastructure Management and Risk Assessment industry that utilizes advanced structural modeling and Artificial Intelligence for infrastructure resilience. Under his leadership, Timezyx has been developing Structural Digital Twins for buildings and infrastructures, thereby enhancing resilience and revolutionizing risk assessment in the face of extreme climate events. With a portfolio of over 100 scientific articles, Dr. Zandi has made a profound impact on structural engineering, including structural assessment and analysis, structural simulation and modeling, structural health monitoring, structural forensic engineering, and structural codes and standardization. He is also an affiliated member of the Structures and Composites Lab at Stanford University and the Principal Investigator of the research area Digital Twin of Civil Infrastructures. He serves as the co-convenor of the International Federation for Structural Concrete fib TG3.2 – Modeling of Structural Performance of Existing Concrete Structures, member of fib TG3.5 – Forensic engineering, and member of the technical committee at IWSHM – International Workshop on Structural Health Monitoring.

LIST OF PAPERS

Civil Engineering

Basic study on High- Flow Concrete Using Coal Gasification Slag as Fine Aggregate

Authors: Haruki Kido, Yoshitaka Matsuura, Shigeyuki Date

Decision Making Support Model for Choosing Construction Method: A Case Study of Egypt

Authors: Ahmed F. Zaki, Elbadr O. Elgendi, Nabil H. El Ashkar

Method to Support the Renovation of Multi-Family Residential Buildings in a Sustainable Construction Aspect

Authors: Robert Bucoń, Agata Czarnigowska

Study on Resistance to Salt Damage of Mortar Containing Ground Granulated Blast-Furnace Slag

Authors: Taichi Maekawa, Satoshi Fujiwara, Nobukazu Nito

Understanding the Challenges of Building Standards for Structural Masonry: A South African Case Study

Authors: Bonga Khuzwayo, Walied Elsaigh, Roderick Rankine, Mark Walker

Flood Mapping Using Sentinel-1 Data. Case Study: Buna River

Authors: Freskida Abazaj, Bujar Drishti, Genti Qirjazi

Neutral Infrastructure Governance

Authors: Maria Antonia Pérez Hernando, David García-Sánchez

Numerical Analysis of Tunnel Supports in Weak Ground Conditions and High Stress Levels

Authors: Giulio Antonucci, Gianluca Bella, Gennaro Scognamiglio

LIST OF PAPERS

Civil Engineering

Evaluating the Effectiveness of Activities to Enhance Construction Schedule Robustness Using Simulation Method

Authors: Lukasz Rzepecki, Piotr Jaskowski, Slawomir Biruk

Hydraulicity Regeneration in Cement Pastes via Thermal Activation

Authors: Abdellatif ABIDAR, Rabah HAMZAoui, Othmane BOUCHENAFa, Sandrine MANSOUTRE, Céline FLORENCE, Laury BARNES DAVIN, Claire CAPRA, Bruno CLASSEN

Numerical Analysis of Concrete Interfaces with Different Connector Arrangements

Authors: Juozas Masėnas, Juozas Valivonis

Evaluation of Traffic Noise Level: A Residential Area Case Study

Authors: Dr. Jamal Almatawah, Dr. Hamad Matter, Dr. Abdul-Salam Al-Temeemi

Decision Making Support Model for Choosing Construction Method: A Case Study of Egypt

Authors: Ahmed F. Zaki, Elbadr O. Elgendi, Nabil H. El Ashkar

Inhibition of Karstification Progressing In Soluble Rocks under Water Pressure Using Chemical Grouts

Authors: Aram Aziz, Mehrdad Ghahremani, Seyed Mohammad Fattahi, Abbas Soroush, Seyed Mohammad Reza Imam

Basic Study on Shotcrete with Cellulose Nanofibres

Authors: Aoba Ota, Masatoshi Uno, Kentaro Kishi

LIST OF PAPERS

Poster Session

Lidar Integration in 3D Documentation of Complex Civil Buildings

Authors: Arli Llabani, Bledar Sina, Eduart Blloshmi

Geodetic Network for the Construction of the Road, Bridge, and High-Speed Railway Line

Authors: Eduart Blloshmi, Bledar Sina, Arli Llabani

Construction of the Local Geodetic Network for the City of Has, Albania

Authors: Bledar Sina, Eduart Blloshmi, Arli Llabani

Evaluation of the Effectiveness of Microsilica-Modified Epoxy Adhesive

Authors: Andrzej Szewczak

SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of ICCEFA 2024:



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ICCEFA 2024

The 6th International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2025) will be held on October 27 - 29, 2025 in Barcelona, Spain.



For inquiries and to obtain further information on the congress, please visit the [website](https://2025.iccefa.com)

You can also email info@iccefa.com or call us at: +1-613-834-9999

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JOURNAL PUBLICATION

Selected articles from the conference will be published in the [International Journal of Civil Infrastructure \(IJCI\)](#) after a secondary review process.

This journal has adopted to the open-access model, meaning all free access to the journal's articles and content with no need for subscription. This ensures larger audience and therefore higher citations.

All published papers of IJCI will be submitted to **Google Scholar**. Additionally, they will be permanently archived in **Portico** (one of the largest community-supported digital archives in the world) and will be assigned unique **DOIs**.

Please visit the following website for the respected journal:

IJCI: <https://ijci.avestia.com>

ETHICS & MALPRACTICE

At International ASET Inc., we take matters that relate to ethics in publishing very seriously. We believe that the peer-review publication process is a vital building block of academia, and its integrity must be maintained at all costs, which is why every article will be peer-reviewed by several experts in the field. Under peer-review, experts in the related fields are required to provide opinions and comments on the improvements of the submissions.

We are proud of our efforts towards abiding by the guidelines of ethics, integrity, and high standards in publishing.

Following are the ethics guidelines set by the organizers for the authors and the reviewers of the conference:

Scientific Committees

Scientific committees consisting of experts in the fields are established. The committees oversee the peer-review and publication process. To see the scientific committee members, please follow the link: [Scientific Committee](#)

Equality and Decisions

One or more reviewer, scientific committee member, or chair, (internal or external), are responsible for evaluating the relevance of the submitted manuscripts to the proceedings, technical and scientific merit, originally, and impact. These evaluations are to be carried out regardless of ethnicity, religion, gender, sexual orientation, political beliefs, and institutions. Successive to peer-review, the Chair has full authority and is solely responsible for the published content and the process thereof.

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Reviewers

Contribution to Decisions

In order for final decisions to be made regarding acceptance or rejection of papers, we rely on peer-review. Peer-review is the process of experts in the field reading, understanding, and objectively commenting on submitted papers. Through peer-review, scholars give back to the academic and scientific community by helping the chair(s) make decisions regarding manuscripts.

Promptness

Reviewers should promptly notify the chair(s) if they are unable or unqualified to carry out their reviewing duties. Reviewers should do their best to provide the reviews to the chair(s) as promptly as possible, and within the designated time-frame.

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Authors

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The paper being submitted for the proceedings should be based on clear objective, discussion, and references. The findings, data, and the arguments being used in the paper should be accurate. It is author's responsibility to guarantee the authenticity of the data in the paper.

Authorship

Only persons who have significantly contributed to the work and the manuscript can be named authors on a paper. These contributions include the idea/concept, design, experiments, evaluation, analysis, drafting or revision of the manuscript, and others. Authors must all have agreed to be named as such and for the manuscript to be submitted. Anyone who has contributed based on the above, but the level of contribution is not significant, may appear in the acknowledgement section of the manuscript.

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Acknowledgement to other's work being used in the paper must be given at all times. Authors of the paper should give comprehensive credit where it is necessary, by citing the work, they use for supporting their own research.

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Authors must notify the chair(s) at the time of submission, if any factor outside the scope of the research has influenced any step of the work and manuscript writing. Examples of such factors include but are not limited to funding, grants, advisory and consultancy, stock ownership, current or past employment, and memberships, among others. All funding sources should be disclosed in the manuscript.

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Works involving human and/or animal subjects must ensure that the work has abided by institutional guidelines, and pre-approved by required bodies. Moreover, consent must be acquired from participants, and privacy of subjects must be ensured. All of the above must be specified with clear statements in the manuscript.

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Schedule:

This conference proceeding accompanies the conference, meaning a new proceedings will be published every year for the corresponding annual conference of this series.

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