



**ICCEFA**  
2023

# **4th INTERNATIONAL CONFERENCE ON CIVIL ENGINEERING FUNDAMENTALS AND APPLICATIONS (ICCEFA 2023)**

**December 4 - 6, 2023| 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 4<sup>th</sup> International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2023).

ICCEFA 2023 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.

In the fourth meeting of this conference, one Plenary Speaker and two keynote speakers will share their expertise with the aim of exposing participants to a wide spectrum of applications, and to foster crosspollination of ideas and develop new research interests. In addition, approximately 6 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to The 4<sup>th</sup> International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2023). We wish you a very successful and enjoyable experience.

**Dr. Charles Lee**

The University of Newcastle, Singapore

*Conference Chair*

*ICCEFA 2023*

**Dr. Zhi Chen**

Concordia University, Canada

*Conference Chair*

*ICCEFA 2023*

**Dr. Mehrab Mehrvar**

Toronto Metropolitan University, Canada

*Conference Chair*

*ICCEFA 2023*

# ABOUT ICCEFA 2023

The 4<sup>th</sup> International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2023) aims to become the leading conference in fields related to Civil Engineering Fundamentals and Applications. The goal of ICCEFA 2023 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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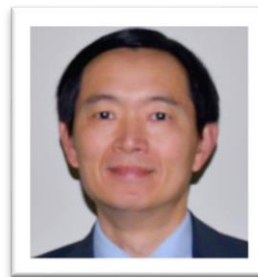
# SCIENTIFIC COMMITTEE

We would like to thank the following for accepting to act as a member of the Scientific Committee for the ICCEFA 2023 Conference:



**Dr. Charles Lee**

The University of  
Newcastle, Singapore  
Conference Chair



**Dr. Zhi Chen**

Concordia University,  
Canada  
Conference Chair



**Dr. Mehrab Mehrvar**

Toronto Metropolitan University (formerly  
Ryerson University), Canada  
Conference Chair

## Scientific Committee Members

- Dr. Iman Hajirasouliha, University of Sheffield, UK
- Dr. John Kamara, Newcastle University, UK
- Dr. Mohammed Kishk, University of the West of England, UK
- Dr. M.D. Mathew, Saintgits College of Engineering, India
- Dr. Maria Anna Polak, University of Waterloo, Canada
- Dr. Hamidreza Sharifan, Albany State University, USA
- Dr. Grzegorz Sierpiński, Silesian University of Technology, Poland
- Dr. Ali Topal, Dokuz Eylul University, Turkey

# PLENARY & KEYNOTE SPEAKERS

The Plenary and keynote information for the 4th International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2023) is as follows:



**Plenary Speaker**

**Dr. Sanjay Ranka**

**University of Florida, USA**



**Keynote Speaker**

**Dr. Hany El Naggar**

**Dalhousie University, Canada**



**Keynote Speaker**

**Dr. Hesham El Naggar**

**Western University, Canada**

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# PLENARY LECTURE



**Title:** Artificial Intelligence and Machine Learning for Smart Transportation

**Dr. Sanjay Ranka, Concordia University, Canada**

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Sanjay Ranka is a Distinguished Professor in the Department of Computer Information Science and Engineering at University of Florida. From 1999-2002, as the Chief Technology Officer at Paramark (Sunnyvale, CA), he developed a real-time optimization service called PILOT for marketing campaigns. PILOT served more than 10 million optimized decisions a day in 2002 with a 99.99% uptime. Paramark was recognized by VentureWire/Technologic Partners as a Top 100 Internet technology company in 2001 and 2002 and was acquired in 2002. Sanjay has also held positions as a tenured faculty member at Syracuse University, academic visitor at IBM and summer researcher at Hitachi America Limited.

Research in high performance computing and bigdata science is an important avenue for novel discoveries in large-scale applications. The focus of his current research is the development of efficient computational methods and data analysis techniques to model scientific phenomenon, and practical applications of focus are improvements to the quality of healthcare and the reduction of traffic accidents. A core aspiration of his research is to develop novel algorithms and software that make an impact on the application domain, exploiting the interdependence between theory and practice of computer science

He has coauthored one book, four monographs, 300+ journal and refereed conference articles. His recent coauthored work has received a best student paper runner-up award at IGARSS 2015, best paper award at BICOB 2014, best student paper award at ACM-BCB 2010, best paper runner-up award at KDD-2009, a nomination for the Robbins Prize for the best paper in the Journal of Physics in Medicine and Biology in 2008, and a best paper award at ICN 2007.

# KEYNOTE LECTURE



**Title:** Innovative Use of Recycled Materials in Infrastructure Projects

**Dr. Hany El Naggar, Dalhousie University, Canada**

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Dr. Hany El Naggar, Ph.D., P.Eng., is a Professor of GeoStructural/Geotechnical Engineering at Dalhousie University with more than 25 years of experience in civil construction, geotechnical and structural engineering and research in Canada and overseas. He has participated in several geotechnical and structural investigations and is experienced in the analysis and design of foundations and soil-structure interaction of buried infrastructure. Dr. El Naggar and his research team have investigated the SSI effects around buried infrastructure and explored innovative uses of tire derived aggregate (TDA) as a buffer zone to create stress arching and reduce demand on rigid pipes and culverts. They also proposed an earth pressure reduction system using a geogrid reinforced platform bridging system to reduce stresses on buried utilities and studied the effects of high-rise buildings on pre-existing tunnels. Likewise, they conducted several slope stability assessments for high embankments and dams and developed a new sand-coated glass fibre reinforced polymer (GFRP) pile with an enhanced friction performance. Dr. El Naggar's research findings have been reported in more than 170 technical publications covering both experimental and numerical work in the fields of SSI, resilient buried infrastructure, and concrete pipes. His research work on the seismic performance of corrugated metal culverts led to changing the seismic provisions of the new version of the Canadian Highway Bridge Design Code (2019) to include rigorous dynamic analysis for flexible buried structures in high seismicity zones. Besides, his work on the modelling of rigid pipes is featured in the CHBDC (2019) as an example of the best practice in modelling buried concrete structures. These research efforts received worldwide recognition.



# KEYNOTE LECTURE



**Title:** Sustainable Design for Wind Turbine Foundations

**Dr. Hesham El Naggar, Western University, Canada**

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Dr. El Naggar is a Distinguished University Professor of Western University, Canada. He is Editor-In-Chief of Soil Dynamics and Earthquake Engineering and past Associate Editor of the Canadian Geotechnical Journal. He published more than 450 technical papers/book chapters on foundations, soil-structure interaction and geotechnical earthquake engineering; and consulted on major projects worldwide. He is the main developer of software DYNA6 used worldwide for design of foundations for dynamic loads. He received numerous awards including: Geosynthetics, Stermac, Meyerhof, Canadian Geotechnical Colloquium Speaker, Western University Distinguished Professorship, Faculty Scholar Award, Outstanding Teaching, and Research Excellence Awards as well as the 2015 Ontario Professional Engineers Medal for Engineering Research & Development. He is an elected Fellow of Canadian Academy of Engineers, Engineering Institute of Canada and the American Society for Civil Engineers.

# LIST OF PAPERS

The Following Papers Were Presented At The 4th International Conference On Civil Engineering Fundamentals And Applications (ICCEFA 2023) :

## Civil Engineering

### Dynamic Response of Machine Foundations Supported on Rigid Inclusions

Authors: Mohamed Mamdouh Mohamed Khalil

### Scientific Principles Of Effluent Repositioning In An Additional By-Product Of A Water Basin By Global Warming Mode

Authors: Nazarenko Oleksiy, Berezovska Alona, Sunichuk Sergiy, Kulik Michailo; Nazarenko Iryna, Ischshenko Oleksiy

### Optimum Details of Thermal-Meta Structures for Enhancing the Insulation Capacity of Concrete Panels

Authors: Park, Young-shik, Park, Jung-eun, Bea, Dong-min

### Maintenance Work Packaging-Based Augmented Reality Remote Maintenance Considering Maritime Network Environment

Authors: Youngsu Kim, Kyungho Lee, Luke (Yang Ouk) Kim, Silha-Choi

### A Study on Model Exchange Technology for Large Scaled Structure CAD Applied to Cross-Reality Contents Authoring

Authors: Young-Soo Han, Kyungho Lee, Yang-Ouk Kim, Hyunbin Yeo, Silha Choi

### Review for Roles of Smart Data from digitalization in modern Shipbuilding Industries to developing an autonomous ship, and affect to ESG Management

Authors: Luke (Yang Ouk) Kim, Kyungho Lee, Youngsu Kim, Silha-Choi

### Flexural Behavior of GFRP-reinforced Beams made of Recycled Coarse Aggregates from Waste Concrete

Authors: Khaldoun Rahal, Mohammad Alrushaidan, Abdullah Almutairi

# SPONSORS

International ASET Inc. would like to thank the following sponsors for their support of ICCEFA 2023:



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# ICCEFA 2024

The 5<sup>th</sup> International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2024) will be held on November 18 - 20, 2024 in Lisbon, Portugal.



## 5<sup>th</sup> International Conference on Civil Engineering Fundamentals and Applications (ICCEFA 2024)

November 18- 20, 2024 | Lisbon, Portugal.  
<https://2024.iccefa.com>

For inquiries and to obtain further information on the congress, please visit the [website](https://2024.iccefa.com)

You can also email [info@iccefa.com](mailto: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.

## ***Confidentiality***

Scientific committee member(s) and publishing staff may not disclose manuscripts or their content, directly or indirectly, to anyone other than individuals invited to review the manuscript (whether they accept or not), other reviewers of the same publications, and publishing staff.

## ***Conflicts of Interest***

Scientific committee member(s) and publishing staff may not utilize the contents of submitted manuscripts whether accepted or rejected, directly or indirectly for their own research purposes without prior written consent by the authors.

# ETHICS & MALPRACTICE

## 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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The reviewer should notify the chair(s) if they find any similarities in the paper being reviewed and any other work that has been published previously.

### ***Confidentiality***

Reviewers must not share the contents of the manuscripts they receive for review, regardless of their decision to review or contents of the review, directly or indirectly, with anyone other than the person who has assigned the review.

### ***Fairness***

Reviewers should review manuscripts fairly and objectively, with supporting evidence or arguments, regardless of personal feelings or biases.

### ***Conflicts of Interest:***

Invited reviewers should immediately inform the chair(s) in case of a conflict of interest based on competitive, collaborative, personal, family, and other relationships with the authors or people involved in the work.

# ETHICS & MALPRACTICE

## **Authors**

### ***Reporting Standards***

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.

### ***Acknowledgement of Source***

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.

### ***Accuracy, Originality, and Plagiarism***

Authors should describe their work and the results of their work accurately and in full. The level of provided accuracy and detail should be such that a reader can replicate the work independently. Inaccurate, incomplete, fraudulent, and misleading statements are considered unacceptable and unethical. Direct or indirect use of other people's work is not allowed, unless properly cited. Previous works that have influenced the current work should also be cited. Presenting someone else's work as one's own is strictly prohibited and is considered plagiarism.

### ***Data and Material***

Authors are encouraged to share their data, software, or other sharable material online, provided copyright and ownership laws surrounding that particular project permit. Authors may also be asked to share such material with the chair(s), and/or reviewers, and must be willing to do so if asked.



# ETHICS & MALPRACTICE

## ***Dual Submissions***

Submitting a manuscript to more than one venue (conference, journal, etc) simultaneously is not allowed. Presenting previously published work to be considered as a new submission, without a significant new interpretation or analysis, is prohibited.

## ***Conflicts of Interest***

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.

## ***Animal and Human Subjects***

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.

## ***Hazardous Material***

It should clearly be identified in the manuscripts if the works have involved hazardous chemicals and material, or devices that can be harmful.

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If an author identifies a major error in a published paper, he/she must immediately inform the publisher. Regardless of whether a significant error is reported by the authors of the work or other readers, authors are obligated to take the necessary steps to correct the issue. It is decided on a case-by-case basis whether an erratum will be submitted to notify future readers of the error and correction, or whether the paper will be retracted. Unethical/plagiarism issues mostly result in a retraction, while unintended mistakes will mostly result in the publication of an erratum.

# ETHICS & MALPRACTICE

## **Publisher**

### ***Errata and Retractions***

The publisher takes the necessary steps to prevent mistakes, academic and scientific misconduct, and unethical behavior, both intended and unintended. When mistakes are reported, the publisher works with chair(s) and authors to publish an erratum clarifying the issue. In cases where the mistakes are severe and significant, the paper might be retracted. If unethical behavior, plagiarism, academic and scientific misconduct, or other such activities are proven to have taken place by an author or authors, the publisher will retract the paper.

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### ***Ownership and Management:***

This conference-proceedings is managed and operated by the International ASET (International Academy of Science, Engineering, and Technology) and Avestia Publishing (the publishing arm of ASET).

### ***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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