# PROCEEDINGS OF THE 12TH INTERNATIONAL CONFERENCE ON CONTROL, DYNAMIC SYSTEMS, AND ROBOTICS (CDSR 2025)

**July 13, 2025 - July 15, 2025 | Imperial College London Conference Center, London, United Kingdom**


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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 12th International Conference of Control, Dynamic Systems, and Robotics (CDSR 2025).**

CDSR 2025 is aimed to become one of the leading international annual conferences in fields related to traditional and modern control and dynamic systems. 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.

**CDSR** is a series of international conferences held yearly.The 12th International Conference of Control, Dynamic Systems, and Robotics (CDSR 2025) is going to be held in a hybrid format, i.e. in person as well as online.

In the At the **twelfth edition of this conference**, five plenary speakers and one keynote speaker will share their expertise, offering participants a broad range of applications and encouraging the exchange of ideas to inspire new research directions. Additionally, around 22 papers will be presented by professors, students, and researchers from around the globe.

We thank you for your participation and contribution to the 12th International Conference of Control, Dynamic Systems, and Robotics (CDSR 2025). We wish you a very successful and enjoyable experience.

**Dr. Aparicio Carranza**
New York City College of Technology, USA
*Conference Chair*
*CDSR 2025*

**Dr. Miguel Bustamante**
Vaughn College of Aeronautics and Technology, USA
*Conference Co-Chair*
*CDSR 2025*

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# ABOUT CDSR 2025

**The 12th International Conference on Control, Dynamic Systems, and Robotics (CDSR 2025) aims to become the leading annual conference in fields related to traditional and modern control and dynamic systems.** The goal of CDSR 2025 is to gather scholars from all over the world to present advances in the fields of Robotics, control and dynamic systems 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.

This Conference focus on all aspects of control and dynamic systems. After successfully holding CDSR'14 to CDSR'24 in Canada, CDSR 2025 is hosted in Imperial College London Conference Center, London, United Kingdom this year. CDSR 2025 is going to be held in a hybrid format, i.e. in person as well as online.

**CDSR** is an acronym for **C**ontrol, **D**ynamic, **S**ystems, and **R**obotics.

The proceedings is published in Ottawa, Canada.

All papers were peer-reviewed

The conference proceedings are published under an ISSN and ISBN number

Each paper is assigned a unique DOI number by Crossref

The conference proceedings are indexed by Scopus and Google Scholar

The proceedings are 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 CDSR 2025 Conference:**

## Scientific Committee Chairs

**Dr. Aparicio Carranza**
**New York City College of Technology, USA**
Conference Chair

**Dr. Miguel Bustamante**
**Vaughn College of Aeronautics and Technology, USA**
Conference Co-Chair

**Dr. Diego Resende Faria**
**University of Hertfordshire, UK**
Conference Local Chair

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- **Dr. Gary M. Bone,** McMaster University, Canada
- **Dr. Mohsin Jamil,** Memorial University of Newfoundland, Canada
- **Dr. Behrad Khamesee,** University of Waterloo, Canada
- **Dr. Henry Leung,** University of Calgary, Canada
- **Dr. Hui Lin,** University of Rhode Island, USA
- **Dr. Veronika Magdanz,** University of Waterloo, Canada
- **Dr. Jeff Pieper,** University of Calgary, Canada
- **Dr. Andre Rosendo,**Worcester Polytechnic Institute, USA
- **Dr. Emre Sariyildiz,** University of Wollongong, Australia
- **Dr. Nariman Sepehri,** University of Manitoba, Canada
- **Dr. Hamed Shahsavan,** University of Waterloo, Canada
- **Dr. Ning Sun,** Nankai University, China
- **Dr. W.J. (Chris) Zhang,** University of Saskatchewan, Canada

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# PLENARY & KEYNOTE SPEAKERS

**The keynote information for the 12th International Conference of Control, Dynamic Systems, and Robotics (CDSR 2025) is as follows:**

## Plenary Speakers

**Dr. Giuseppe Carbone**
University of Calabria, Italy

**Dr. Anouck Girard**
The University of Michigan, USA

**Dr. Robert Landers**
University of Notre Dame, USA

**Dr. Tony Prescott**
University of Sheffield, UK

**Dr. Cameron Riviere**
Carnegie Mellon University, USA

## Keynote Speaker

**Dr. Guohao Li**
Eigent.AI, UK

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# PLENARY SPEAKER

**Titles:** Multi-Disciplinarity in Robotics Applications: Needs, Challenges, And Case Studies

Dr. Giuseppe Carbone, University of Calabria, Italy

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Giuseppe Carbone has got his PhD degree in Robotics from the University of Cassino, Italy, in 2004 He has been visiting professor at Universidad Carlos III of Madrid, Beihang University, Waseda University, and several other well-reputed International Research Institutions. From 2024 he has joined East China Jiaotong University. From 2020 he is Chair of IFToMM TC on Robotics and Mechatronics. From 2018 he has joined University of Calabria, Italy. From 2018 to 2021 he has been Visiting professor at Sheffield Hallam University, UK where he served as Senior Lecturer and member of the Executive board of Sheffield Robotics from 2015 to 2017. He has been Scientific Director of the International Research Laboratory Intelligent Robotic Systems and Technologies. Among others he is Editor-in-Chief of Robotica Journal (Cambridge Univ. Press), Section EIC of Journal of Bionic Engineering, MDPI Robotics, MDPI Machines, Technical Editor of IEEE/ASME Transactions on Mechatronics. He has been PI or co-PI of more than 20 projects including 7th European Framework and H2020 funds. He has received more than 20 Best Paper awards and more than 10 International Best Patent awards. His research interests cover aspects of Engineering Design, Mechanics of Robots, Mechanics of Manipulation and Grasp, Mechanics of Machinery with over 500 research paper outputs, 20 patents, and 16 Phd completions (8 ongoing). He has been also member of 20 PhD evaluation Commissions in Italy, Spain, Finland, UK, Romania, Mexico, India. He has been invited to deliver Keynote speeches and lectures on his research activity at more than 30 International events. He edited/co-edited four books that have been published by Springer and Elsevier International Publishers. h-index 40 n. citations >6000 (source google scholar). In January 2023 he received an Honoris Causa Doctoral Degree from Technical University of Cluj-Napoca (Romania). In June 2023 he received an Honoris Causa Doctoral Degree from University of Craiova (Romania).

# PLENARY SPEAKER

**Titles:** Safe Autonomy for Aerospace and Vehicle Systems

Dr. Anouck Girard, The University of Michigan, USA

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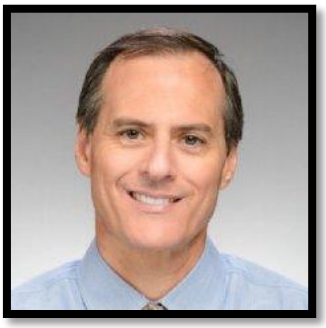
Professor Anouck Girard received the Ph.D. degree in ocean engineering from the University of California, Berkeley, CA, USA, in 2002. She was with the University of Michigan, Ann Arbor, MI, USA, from 2006 to 2025, where she was a Professor of Robotics and Aerospace Engineering. She was named an Arthur F. Thurnau professor at the University of Michigan in 2024, in recognition of outstanding contributions to undergraduate education. Starting in June 2025, she will be the Department Chair for Aerospace Engineering at Embry-Riddle Aeronautical University in Daytona Beach, FL, USA. She has co-authored the book Fundamentals of Aerospace Navigation and Guidance (Cambridge University Press, 2014). Her current research interests include vehicle dynamics and control, as well as decision systems. Dr. Girard was a recipient of the Silver Shaft Teaching Award from the University of Michigan and a Best Student Paper Award from the American Society of Mechanical Engineers. She was a Fulbright Scholar in the Dynamic Systems and Simulation Laboratory at the Technical University of Crete in 2022. She was a member of the National Academy of Engineering Committee on Using Machine Learning in Safety-Critical Applications: Setting a Research Agenda in 2023-24.

# PLENARY SPEAKER



**Titles:** Automating Forming Processes

Dr. Robert Landers, University of Notre Dame, USA

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Dr. Robert G. Landers (rlanders@nd.edu) is the Advanced Manufacturing Collegiate Professor in the Department of Aerospace and Mechanical Engineering at the University of Notre Dame. He was previously a Curators' Distinguished Professor at the Missouri University of Science and Technology and served for three years as a program manager at the National Science Foundation working in the Dynamics, Controls, and System Diagnostics, Foundational Research in Robotics, Cyber Physical Systems, Future Manufacturing, and Leading Engineering for America's Prosperity, Health, and Infrastructure (LEAP HI) programs. He received his Ph.D. degree in Mechanical Engineering from the University of Michigan in 1997. His research interests are in the areas of modeling, analysis, monitoring, and control of manufacturing processes, and in the estimation and control of lithium-ion batteries and hydrogen fuel cells. He received the Society of Manufacturing Engineers' Outstanding Young Manufacturing Engineer Award in 2004, the ASME Journal of Manufacturing Science and Engineering's Best Paper Award in 2014, and the ASME Journal of Dynamic Systems, Measurement, and Control Best Paper Award in 2020. He is a Fellow of ASME and SME, and a senior member of IEEE.

# PLENARY SPEAKER

**Titles:** Brain-inspired Cognitive Architectures for Robotics

Dr. Tony Prescott, University of Sheffield, UK

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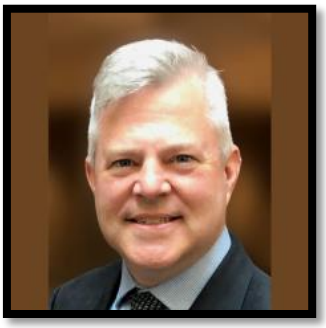
Tony Prescott is Professor of Cognitive Robotics at the University of Sheffield in the UK. His background mixes psychology (MA Edinburgh), neuroethology and brain theory with robotics and AI (MSc Aberdeen, PhD Sheffield), and his research aims at answering questions about natural intelligence by creating synthetic entities with capacities such as perception, memory, emotion and sense of self. He has co-founded the International Living Machines conference series, and two UK companies developing robotic platforms and software. His popular science book The Psychology of Artificial Intelligence, published in 2024, explores the similarities and differences between human and artificial intelligence. His research has been covered by major news and scientific media including the BBC, CNN, Discovery Channel, Science Magazine, France 24 and New Scientist.

# PLENARY SPEAKER



**Titles:** Active and Passive Compensation of Physiological Motion for Surgical Accuracy Enhancement

Dr. Cameron Riviere, Carnegie Mellon University, USA

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Cameron Riviere is the Director of the Surgical Mechatronics Laboratory in the Robotics Institute at Carnegie Mellon University. He received the Ph.D. in mechanical engineering from Johns Hopkins University in 1995, and joined the Robotics Institute at Carnegie Mellon the same year. He is presently Research Professor of Robotics, Biomedical Engineering, and Mechanical Engineering. He is also an Adjunct Professor in the Department of Rehabilitation Science and Technology at the University of Pittsburgh. He has been guest editor of special issues on medical robotics in the IEEE Transactions on Medical Robotics and Bionics, the Annals of Biomedical Engineering, and the Proceedings of the IEEE. He has received Best Paper awards from the IEEE/ASME Transactions on Mechatronics and from numerous international conferences. His research interests include medical robotics, robot-assisted human micromanipulation, and biomedical applications of human-machine interfaces.

# KEYNOTE SPEAKER

**Titles:** Finding the Scaling Law of Agents

Dr. Guohao Li, Eigent.AI, UK

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Guohao Li is a founder and CEO of Eigent.AI. He is an artificial intelligence researcher and an open-source contributor working on building intelligent agents that can perceive, learn, communicate, reason, and act. He is the core lead of the open source projects CAMEL-AI.org and DeepGCNs.org. Guohao Li was a postdoctoral researcher at University of Oxford with Prof. Philip Torr. He obtained his PhD degree in Computer Science at King Abdullah University of Science and Technology (KAUST) advised by Prof. Bernard Ghanem. During his Ph.D. studies, he was fortunate to work at Intel ISL with Dr. Vladlen Koltun and Dr. Matthias Müller as a research intern. He visited ETHz CVL as a visiting researcher. He also worked at Kumo AI and PyG.org with Prof. Jure Leskovec and Dr. Matthias Fey as a PhD intern. His primary research interests include Autonomous Agents, Graph Machine Learning, Computer Vision, and Embodied AI. He has published related papers in top-tier conferences and journals such as ICCV, CVPR, ICML, NeurIPS, RSS, 3DV, and TPAMI.

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**The following papers were presented at the 12th International Conference on Control, Dynamic Systems, and Robotics (CDSR 2025).**

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**Design of a Cable-Driven Soft Elbow Exoskeleton for Rehabilitation and Movement Assistance**
Authors: Alejandro Toro-Ossaba, Juan C. Tejada, Daniel Sanin-Villa, Janet C. López-Romero, E.G. Hernandez-Martinez, Alexandro López-González

**Design of a PD Controller Based on Eigenvalue Assignment for Active Magnetic Bearings-Rigid Rotor Systems**
Authors: Tianhao Zhou, Changsheng Zhu, Wengheng Li

**Digital Model-Based Motor Servo Control Considering a SamplingInduced Time Delay**
Authors: Morteza Mohammadzaheri, Ali Al-Humairi, Gholamreza Vakili-Nezhaad, Aydin AziziSteve Jones, Chris Hamlin, Mojtaba Ghodsi, Payam Soltani

**A New Type of Non-contact Integrated Sensor with Vibration Displacement and Velocity for Active Magnetic Bearing Rotor Systems**
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**Mixed Reality Platform for PLC Operation in Academy and Industry Environment**
Authors: Jorge Emilio García Contreras, Javier Villafuerte de Gortari, MSc. Joel Arango-Ramirez

**Towards More Reliable Biometric Systems: Advanced Fingerprint Image Quality Enhancement Techniques**
Authors: Pattaraporn Samapamit, Chirattikan Srisook ,Warinthorn Kiadtikornthaweeyot Evans

**Synchronization of Complex Dynamic Networks for Differential Wheel Mobile Robots**
Authors: Roberto Carmona R., Mario Ramírez N., Rodrigo Ramírez R., Jaime González-Sierra, Luis O. Ahedo

**Study of Unknown Environments Exploration Techniques Based on ROS-Enabled Omnidirectional Mobile Robot**
Authors: Djaidja Djabir, Besseghieur Khadir, Nemra Abdelkrim , Boukouira Zineddine, Dellali Rihem

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**Improved Federated Learning with Differential Privacy for YOLO Detector on Phase Images**
Authors: Qianyu Chen, Kerem Delikoyun, Oliver Hayden, Klaus Diepold

**Model Transfer and Selection Control under Varying and Faulty Conditions**
Authors: Yunbo Li, Long Zhang

**Post-Stroke Upper and Lower-Limb Rehabilitation Through BrainComputer Interface, Robotic Devices and Transcranial Alternating Current & Functional Electrical Stimulations**
Authors: Teodiano Bastos-Filho, Aura Ximena González-Cely, Sheida Mehrpour, Sheila Schreider, Fernanda Souza, Fernando Cabral , Ana Cecilia Villa-Parra

**Enhancing Student Engagement in Robotics Through Competitive Challenges**
Authors: Mohsen AL Zamzam, Mohammed Almutawa, Mohammed AlKhabbaz Haitham Saleh, Sami ElFerik

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# SPONSORS

**International ASET Inc. would like to thank the following sponsors for their support of CDSR 2025:**






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# JOURNAL PUBLICATION

**Selected articles from the conference will be published in the following journal after a secondary review process:**

**JMIDS - Journal of Machine Intelligence and Data Science**

This journal have 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 JMIDS 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:

- JMIDS: https://jmids.avestia.com

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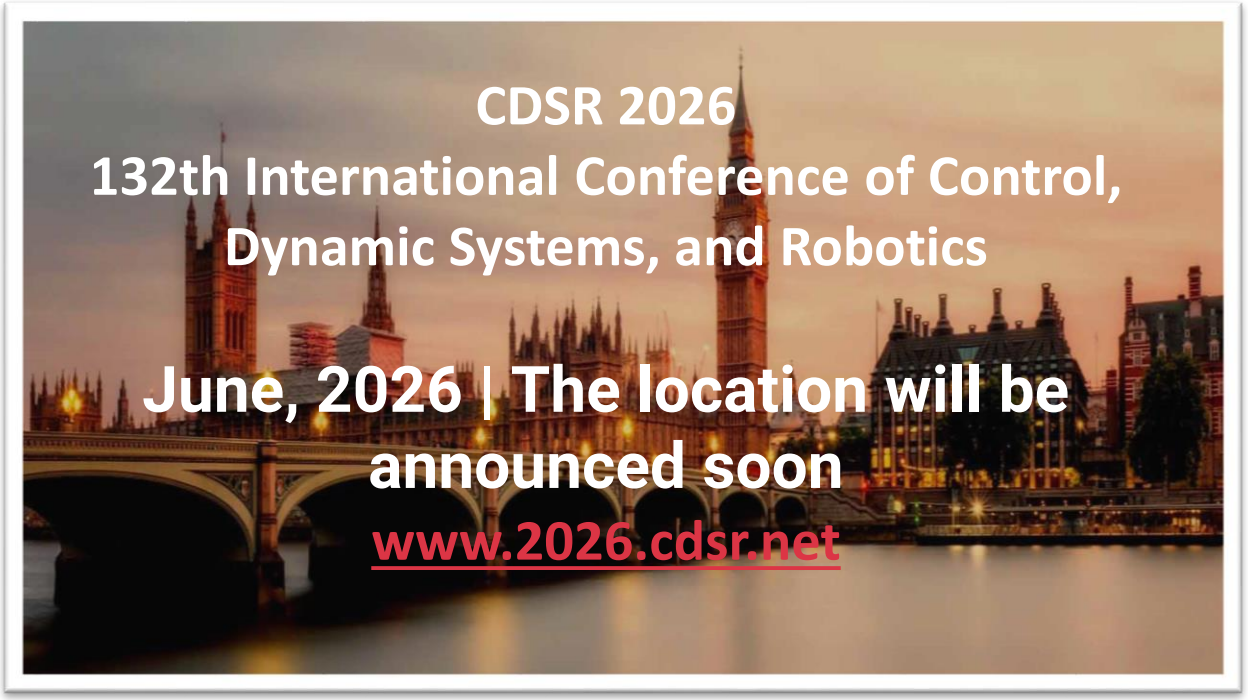
# CDSR 2025

**The 13th International Conference of Control, Dynamic Systems, and Robotics (CDSR 2026)** will be held on **June, 2026, The location will be announced soon.**




**For inquiries and to obtain further information on the congress, please visit the website**

**You can also email info@cdsr.net or call us**

**at: +1-613-834-9999**

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# 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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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.



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# 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.

***Acknowledgment of Source***
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.

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

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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.



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# ETHICS & MALPRACTICE

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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 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.



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# ETHICS & MALPRACTICE

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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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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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# 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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***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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