



ICSTA
2023

**PROCEEDINGS OF THE 5TH
INTERNATIONAL CONFERENCE ON
STATISTICS: THEORY AND APPLICATIONS
(ICSTA 2023)**

August 3 - 5, 2023 | Brunel University, London, United Kingdom

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ISBN: 978-1-990800-25-2 | ISSN: 2562-7767

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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 Statistics: Theory and Applications (ICSTA 2023).

The goal of ICSTA 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.

In the fifth meeting of this conference, one Plenary Speaker and four 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 30 papers will be presented from professors, students, and researchers across the world.

We thank you for your participation and contribution to the 5th International Conference on Statistics: Theory and Applications (ICSTA 2023). We wish you a very successful and enjoyable experience.

Dr. Noelle Samia
Northwestern University, USA
Conference Chair
ICSTA 2023

Dr. Dirk Husmeier
The University of Glasgow, UK
Conference Co-Chair
ICSTA 2023

ABOUT ICSTA 2023

The 5th International Conference on Statistics: Theory and Applications (ICSTA 2023) aims to become the leading annual conference in fields related to Statistics: Theory and Applications. The goal of ICSTA 2023 is to gather scholars from all over the world to present advances in the fields related to Statistics: Theory and Applications 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.

ICSTA is an international conference will be held yearly. This conference focus on all aspects Statistics: Theory and Applications. ICSTA Will be held this year in Brunel University, London, United Kingdom.

ICSTA is an acronym for International , Statistics: Theory and Applications.

- The proceedings are published in Ottawa, Canada.
- All papers were peer-reviewed
- The congress proceedings is 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 is permanently archived in [Portico](#) (one of the largest community-supported digital archives in the world)

Scopus

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 Crossref


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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 ICSTA 2023 Conference:



Dr. Noelle Samia
Northwestern University, USA
Conference Chair



Dr. Dirk Husmeier
The University of Glasgow, UK
Conference Co-Chair



Dr. Jürgen Pilz
University of Klagenfurt, Austria
local Committee Member

Scientific Committee Members

- **Dr. Mylène Bédard**, University of Montreal, Canada
- **Dr. Yogendra Chaubey**, Concordia University, Canada
- **Dr. Michael Evans**, University of Toronto, Canada
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- **Dr. Dirk Husmeier**, University of Glasgow, UK
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- **Dr. Azizur Rahman**, Charles Sturt University, Australia
- **Dr. Noelle Samia**, Northwestern University, USA
- **Dr. Kimberly Sellers**, Georgetown University, USA

PLENARY & KEYNOTE SPEAKERS

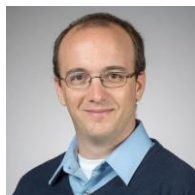
The keynote information for the International 5th International Conference on Statistics: Theory and Applications (ICSTA 2023) is as follows:

Plenary Speakers



[Dr. Melissa Wilson](#)
Arizona State University, USA

Keynote Speakers



[Dr. Stefano Castruccio](#)
University of Notre Dame, USA



[Dr. Jian Kang](#)
University of Michigan, USA



[Dr. Cynthia Rudin](#)
Duke University, USA

ICSTA 2023 PLENARY SPEAKER



Titles: Sex-Biased Genome Evolution

Dr. Melissa Wilson, Arizona State University, USA

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Melissa Wilson is a computational evolutionary biologist whose main research interests include sex-biased biology. Her lab studies the evolution of sex chromosomes (X and Y in mammals), how changes in population history affect the sex chromosomes differently than the non-sex chromosomes, and develops novel approaches to incorporating sex as a biological variable into genomics research. Usually she studies mammals, with a particular focus on how the evolution of the placenta shaped sex differences in human health and how sex differences in the placenta may underlie sex differences in the developmental origins of disease. Dr. Wilson completed a Bachelor's in Mathematics at Creighton University and a Ph.D. in Integrative Biosciences: Bioinformatics and Genomics at Penn State University. She was a Miller Fellow at UC Berkeley before starting The Sex Chromosome Lab at Arizona State University. Although the lab primarily focuses on mammals, being located in the Sonoran desert precipitated additional projects including the study of sex chromosomes in the Gila monster, and population genetics in desert tortoises.

ICSTA 2023 KEYNOTE SPEAKERS

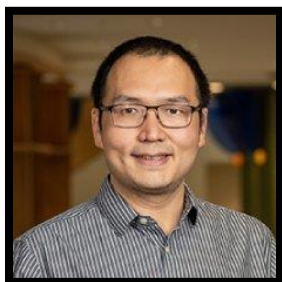


Titles: Stochastic Environmental Modeling in a Time of Convergence: Physics Meets Artificial Intelligence
Dr. Stefano Castruccio, University of Notre Dame, USA

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Prof. Castruccio obtained his PhD at the University of Chicago (USA), and has worked in Saudi Arabia and the United Kingdom before his current appointment as Associate Professor at the University of Notre Dame (USA). His main area of research focuses on the development of spatio-temporal statistical models for environmental applications, with applications spanning from assessment of renewable energy to assessing mortality from air pollution. His focus is mostly on climate and weather modes, and the use of statistical and machine learning models that can act as a stochastic approximation to provide a computationally affordable assessment of parameter sensitivity analysis. His methodological research is focused on the development of non-stationary Gaussian processes in Euclidean and spherical domains, and in scalable multi-resolution inference for high-dimensional processes in space and time.



Titles: Deep Kernel Learning based Gaussian Processes for Bayesian Image Regression Analysis
Dr. Jian Kang, University of Michigan, USA

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Dr. Jian Kang is a Professor in the Department of Biostatistics at the University of Michigan. He received his PhD in Biostatistics from the University of Michigan in 2011. He was an Assistant Professor in the Department of Biostatistics and Bioinformatics and the Department of Radiology and Imaging Sciences at Emory University from 2011- 2015. His main research interests are developing statistical methods and theory for large-scale complex biomedical data analysis with focuses on Bayesian approaches, imaging statistics and bioinformatics. He has co-authored over 110 publications in statistical journals and medical journals. Dr. Kang currently serves as the Associate Editor of Annals of Applied Statistics, Biometrics, The New England Journal of Statistics in Data Science and Statistics in Medicine. Dr. Kang was elected as the Fellow of the American Statistical Association in 2021.

ICSTA 2023 KEYNOTE SPEAKER



Titles: Understanding How Dimension Reduction Tools Work

Dr. Cynthia Rudin, Duke University, USA

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Cynthia Rudin is Earl D. McLean, Jr. Professor of Computer Science, Electrical and Computer Engineering, Statistical Science, Mathematics, Biostatistics & Bioinformatics at Duke University. She directs the Interpretable Machine Learning Lab, whose goal is to design predictive models that people can understand. Her lab applies machine learning in many areas, such as healthcare, criminal justice, and energy reliability.

Prof. Rudin holds an undergraduate degree from the University at Buffalo and a PhD from Princeton University. She is the recipient of the 2022 Squirrel AI Award for Artificial Intelligence for the Benefit of Humanity from the Association for the Advancement of Artificial Intelligence (the “Nobel Prize of AI”). She is also a three-time winner of the INFORMS Innovative Applications in Analytics Award, and a 2022 Guggenheim Fellow. She is a fellow of the American Statistical Association, the Institute of Mathematical Statistics, and the Association for the Advancement of Artificial Intelligence. She has recently joined the US National AI Advisory Committee (NAIAC) as a member of the Subcommittee on AI and Law Enforcement.

LIST OF PAPERS

The following papers were presented at the 5th International Conference of Energy Harvesting, Storage, and Transfer (ICSTA 2023).

Applied Statistics

[Lipschitz Variational Approximation of Total Variation Distance](#)

Author: Rui Ding

[GSDMM Model Evaluation Techniques with Application to British Telecom Data](#)

Authors: Hesham Abdelmotalieb, Małgorzata Wojtyś, Craig McNeile

[Forecasting Financial Times Series with Long Memory and Structural Break](#)

Authors: Euloge Francois Kouame, Lanzeni Tuo

[Deception Detection using Random Forest-based Ensemble Learning](#)

Authors: Kun Bu, Kandethody Ramachandran

[Fuzzy Clustering Of Ordinal Time Series Based On Two Novel Distances](#)

Authors: Ángel López-Oriona, Christian H. Weiss, José A. Vilar

[Validation of Two-sample Location-scale Model Using Empirical Likelihood Based Statistics](#)

Authors: Leonora Pahirko, Janis Valeinis, Janis Gredzens, Madara Krumina

[Evaluating closed-loop effects from vasodilator administration for pulmonary hypertension treatment](#)

Authors: Agnieszka Borowska, Mitchel Colebank, Mette Olufsen, Dirk Husmeier

[Statistics Anxiety: What are the antecedents?](#)

Authors: Milica Maricic, Teodora Rajkovic, Danica Lecic-Cvetkovic, Marina Ignjatovic

LIST OF PAPERS

Applied Statistics

[Using Indicators of Entrepreneurial Ecosystem Quality for Segmenting Countries: A Biclustering Approach](#)

Authors: Teodora Rajkovic, Milica Maricic, Ognjen Andjelic, Marina Ignjatovic

[An Overview of Statistical Models in High Throughput Screening \(HTS\) for Toxicity Data](#)

Authors: Mehdi Razzaghi

[Big Data and Design of Experiments: A Combination Which Can Enhance the Performances of Machine Learning Models](#)

Authors: Rosa Arboretti, Livio Corain, Alberto Molena

[Multivariate Permutation Test for Model Selection](#)

Authors: Elena Barzizza, Riccardo Ceccato, Luigi Salmaso

[Cause-Specific Mortality In Southern Uganda Using Verbal Autopsy 1999-2019](#)

Authors: Doreen Nabukalu, Julia Calazans, Milly Marston, Fredrick Makumbi, Tom Lutalo, Jim Todd

LIST OF PAPERS

Statistical Methodology

[Variable Selection for a Contaminated Mixture of Normals Classification Model](#)

Authors: Jorge Sánchez, Nema Dean, Tereza Neocleous

[High Dimensional Change Points: Challenges and Some Proposals](#)

Authors: Lupeng Zhang, Reza Drikvandi

[FReET: Software for Uncertainties Propagation](#)

Authors: Drahomír Novák

Medical Statistics

[Bayesian inference of cardiac models emulated with a time series Gaussian process](#)

Authors: Yuzhang Ge, Dirk Husmeier, Alan Lazarus, Arash Rabbani, Hao Gao

[PRECISION-LerVAD: A personalized algorithm to detect cardiac arrhythmia and major bleeding in LVAD devices](#)

Authors: M. Moazeni, L. Numan, M.K. Szymanski, N.P. Van der Kaaij, F.W. Asselbergs, L.W. van Laake, E. Aarts

[Estimating the Prevalence of Severe Psychiatric Disorders among Underages in Italy Using Capture-Recapture Methods](#)

Authors: Danilo Alunni Fegatelli, Luca Tardella, Francesco Catenacci, Giulia Natalucci, Noemi Faedda, Dario Calderoni

[Development of a Hospital Frailty Risk Score for Community-dwelling Older Adults Using Data from Electronic Hospital Records in South Korea](#)

Authors: Jinhee Kim, Hee-Sun Kim, Gihwan Bae

LIST OF PAPERS

Time-Series Analysis

[Diagonal Vector Autoregressive and Multivariate Autoregressive Distributed Lag Models and Their Variance Properties](#)

Authors: Anthony Usoro, Emediong Usoro

[Fisher-Shannon Analysis of MODIS Terra Evapotranspiration Satellite Data to Reveal Status of Plant Infection](#)

Authors: Luciano Telesca, Nicodemo Abate, Farid Faridani, Michele Lovallo, Rosa Lasaponara

[Short and Long-term Forecasting of Emerging Market Data using ARIMA-based and Boosting Machine Learning Algorithms](#)

Authors: Md Al Masum Bhuiyan, Constanza Zurita Valdebenito, Md Shamsul Alam, Nusrat Sarmin

LIST OF PAPERS

Computational Statistics

[Scalable Simulations of 3D Turbulence Fine Structure in Nanoflare Using a Novel Plasma Statistical Algorithm](#)

Authors: Bojing Zhu, Yan Li, Zhikuo Ma, Hui Yan, Ying Zhong, Wu Wang, Yufeng Guo5, L.Zheng, David A Yuen

[Fuzzy C-Medoids Clustering Of CUB Data to Handle Likert-Type Scales Uncertainty](#)

Authors: Elena Barzizza , Nicolò Biasetton , Riccardo Ceccato , Marta Disegna , Alberto Molena

[Product Quality Control Forecast Using Machine Learning Algorithms: a Case Study](#)

Authors: Rosa Arboretti, Elena Barzizza, Nicolò Biasetton, Riccardo Ceccato, Livio Corain, Marta Disegna, Luca Pegoraro, Luigi Salmaso, Andrea Vinelli, Pietro Barbieri, Luca Bortolan, Matteo Canale, Marco Giada, Davide Longi, Fabio Napol, Danny Paganin

[Bayesian Model Selection and Emulation for Protein Fluorescence](#)

Authors: William Ryan, Dirk Husmeier, Olaf Rolinski, Vladislav Vyshemirsky

SPONSORS

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



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ICSTA 2024

The 6th International Conference of On Statistics: Theory and Applications (ICSTA 2024) will be held on August, 2024 | Berlin, Germany.



For inquiries and to obtain further information on the conferences, please visit our website please visit our [website](#)
You can also email info@icsta.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](#)

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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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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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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.

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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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ETHICS & MALPRACTICE

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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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