Longbing Cao
IEEE TF-DSAA Chair, University of Technology Sydney, AUSTRALIA

Marley M.B.R. Vellasco
IEEE CIS VP-Conferences, Pontifical Catholic University of Rio de Janeiro (PUC-Rio), BRAZIL

IEEE DSAA–The IEEE Flagship Conference in Data Science

The Era of Data Science and Analytics

The twenty-first century has ushered in a new age that is coined as *data science* and *big data analytics*. Data-driven scientific discovery is regarded as the fourth science paradigm. Data science has been a core driver of the new-generation science, technologies and economy, and is driving new researches, innovation, profession, applications and education across both disciplines and business domains. There are many scientific and technical challenges associated with big data, ranging from data capture, creation, storage, search, sharing, modeling, representation, analysis, learning, visualization, explanation, and decision-making. Among the many data characteristics and complexities to be addressed, we mention here the hybridization of heterogeneous, multisource, hierarchical, interactive, dynamic, multidimensional, and quality-poor data mixed with real-time business operations, strategic planning, decision-making, value creation, and future developments. Another important agenda in the data science community is to address the misinformation and pitfalls and promote a deep understanding of the data science nature and reality.

Accordingly, the field of data sciences and big data analytics have been evolving from statistics since half century ago to broad areas including but not limited to data and signal analytics, knowledge discovery, information retrieval, machine learning, statistics, optimization, computing, and data management. By synergizing the three big areas—statistics, informatics and computing, data science has been spreading to essential and specific areas such as (1) data intelligence and complexity analysis, (2) representation, modeling, analytics, mining and learning including statistical and deep learning, (3) computational intelligence including neural networks, evolutionary computing, fuzzy systems, (4) neuroscience and linguistics, (5) behavioral science and social and economic computing, (6) uncertainty and optimization, (7) system and modeling infrastructures and architectures, (8) networking and interoperation, (9) social issues including privacy, security, trust, value and impact, (10) enterprises, services, applications, solutions and systems, and (11) simulation, visualization and explanation.

IEEE DSAA—Transdisciplinary Data Science Led by IEEE

The IEEE International Conference on Data Science and Advanced Analytics (IEEE DSAA) (see more about DSAA at dsaa2020.dsaa.co) aims to be a premier forum for addressing the above ever increasing and important demand, data volume and complexities, and the associated business problems, opportunities, decisions and values in a translational and transdisciplinary approach. DSAA was launched in 2014 in Shanghai chaired by Prof. Masaru Kitsuregawa and Prof. Philip S Yu as a major IEEE initiative in data science and big data, received support from the IEEE Big Data Initiative. Since 2015, DSAA has been financially sponsored by the IEEE Computational Intelligence Society (CIS), and also technically sponsored by ACM through SIGKDD, the American Statistical Association (ASA), and the China Computer Foundation (CCF). DSAA has been successfully rotated in Asia, Europe and America with DSAA'2019 held in Washington chaired by Prof. Philip S Yu and Prof. Richard De Veaux, DSAA'2018 in Turin chaired by Dr. Francesco Bonchi and Prof. Foster Provost, DSAA'2017 in Tokyo Chaired by Prof. Fosca Giannotti, Prof. Tomoyuki Higuchi and Prof. Motoda Motoda, DSAA'2016 in Montreal chaired by Prof. Stan Matwin and Prof. Osmar R. Zaiane, DSAA'2015 in Paris chaired by Prof. Longbing Cao and Prof. Eric Gaussier. DSAA'2020 will be held in Sydney on 6–9 Oct. 2020 and chaired by Prof. Geoff Webb and Dr. Usama Fayyad.

IEEE DSAA, technically managed by the IEEE CIS Task Force on Data Science and Advanced Analytics (TF-DSAA), has taken a strong transdisciplinary approach. The annual DSAA provides a premier data science forum that brings together researchers, industry and government practitioners, as well as developers and users in statistics, computing science, informatics and intelligence science for the exchange of the latest theoretical developments in data science and analytics and the best practice for a wide range of applications. DSAA also features its cross-domain interactions and gap-bridging between academia and business for innovative industry and government data science and analytics.

Synergizing statistics (via ASA), computing and informatics/intelligence sciences (IEEE and ACM), DSAA sets up a high standard for its organizing committee, keynote speeches, submissions to main conference and special sessions. Leading researchers who have delivered keynote speeches at DSAA including physician Prof. Kyle Cranmer, machine learning expert Dr. Christopher Bishop, statisticians Prof. Michael I. Jordan, Prof. David Donoho, Prof. Serge Abiteboul and Prof. Bin Yu, robotics expert Prof. Hiroaki Kitano, deep learning founder Prof. Yoshua Bengio, and business data science leader Dr. Usama Fayyad. DSAA has a highly competitive rate for paper acceptance. DSAA has been widely recognized as a dedicated flagship in data science and analytics, such as by the Google Metrics[1] and the conference ranking made by the China Computer Foundation[2] as an influential event in the area.

The conference invites submission of papers describing innovative research on all aspects of data science and advanced analytics as well as application-oriented case studies that make significant, original, and reproducible contributions to improving the practice of data science and analytics in real-world scenarios. Visionary opinions, reviews and surveys are also welcome.

---

[1]https://scholar.google.com/citations?view_op=top_venues&hl=en&vq=eng_datamininganalysis
[2]https://www.ccf.org.cn/c/2019-04-25/663625.shtml

DSAA has widely involved industry, government and non-profit organizations. DSAA received sponsorship and support from multinational vendors and organizations such as Baidu, Google, Huawei, Infosys, SAP and TCS.

IEEE DSAA Tracks and Activities
DSAA solicits both theoretical and practical works on data science and advanced analytics through two main tracks: Research and Applications, in addition to a series of Special Sessions, Student Poster sessions, Industry Poster sessions, and an Industry Day, which form the essential features of DSAA. DSAA also facilitates its unique Trends and Controversies session, Invited Industry Talks session, Panel discussion, and four keynote speeches

IEEE | Cosponsors ACM/ASA/CCF

DSAA2020

7TH IEEE/ACM/ASA INTERNATIONAL CONFERENCE
ON DATA SCIENCE AND ADVANCED ANALYTICS

6 – 9 October 2020
Sydney, Australia

dsaa2020.dsaa.co

from statistics, mathematics, informatics, computing, and business on data science research and applications. Both traditional and hands-on tutorials are offered in DSAA, in addition to additional data science schools and early-career researcher forums. As the only initiative in IEEE, ACM and ASA, the DSAA Next-generation Data Scientist Award (NGDS Award) calls for the nominations of data science role models, contributing to training and fostering next-generation data scientists. DSAA'2020 will also host a journal track on Data Science and AI in FinTech.

The **Research Track** solicits the latest, original and significant contributions related to foundations and theoretical developments of Data Science and Advanced Analytics. Topics of interest include but are not limited to:

❏ Data science foundations and theories
❏ Mathematics and statistics for data science and analytics
❏ Understanding data characteristics and complexities
❏ Data quality and misinformation
❏ Models, algorithms, and methods
❏ Optimization, inference, and regularization
❏ Infrastructures, and systems

❏ Evaluation, explanation, visualization, and presentation
❏ Survey and review

The **Application Track** solicits original, impactful and actionable application results of Data Science and Advanced Analytics across various disciplines and domains, including business, government, healthcare and medical science, physical sciences, and social sciences. Submissions address a real problem on real-life data that is reproducible ideally through a public git repository, providing inspiring results to policy-makers, end-users or practitioners or highlighting new practical challenges for researchers. Topics of interest include but are not limited to:

❏ Domain-driven data science and analytics practice
❏ Real-world applications and case studies
❏ Operationalizable infrastructures, platforms and tools
❏ Deployment, management, and decision-making
❏ System and software demonstrations
❏ Social and economic impact modeling
❏ Ethics, social issues, privacy, trust, and bias
❏ Reflections and lessons for better practice

DSAA **Special Sessions** substantially upgrade traditional workshops to encourage emerging topics in data science while maintain rigorous selection criteria, with accepted papers included in the main conference proceedings. Typical topics organized in the DSAA special sessions consist of mathematics and statistics for data science, data quality issues, data science for finance, health and medical data science, data science for cyber-physical systems, environmental and geo-spatial data analytics, misinformation and fake news, and social issues including privacy, security and trust.

Calls for Participating in IEEE DSAA Conferences

More information about **DSAA conferences** is available at www.dsaa.co. Specific information about **IEEE DSAA'2020** which will be held on 6–9 Oct. 2020 in Sydney Australia is available at dsaa2020.dsaa.co, and **IEEE DSAA'2021** will be held on 6–9 Oct. 2021 in Porto, Portugal. The **Call for hosting IEEE DSAA'2022 and DSAA'2023 proposals** is available at www.dsaa.co.