



Call for Papers

Special Issue topic:

Towards Designing Valuable and Explainable Data-Driven Systems

1. Overview

In the age of "Data Science and Advanced Analytics", we are witnessing a race for developing data-driven smart systems in various domains, such as business, finance, healthcare, environment, cybersecurity. This is motivated by the availability and explosion of data. This development contributes to getting added value and increasing the power of data-driven decision making of companies and citizens. The achievement of these two goals passes through the intensive usage of virtues of data and knowledge. The data dimension is mainly related to Data Science that unifies data integration, statistics, data mining, databases, and distributed systems. In Data Science, advanced analytics techniques including statistics, data mining, and Machine/Deep Learning are widely used and show their successes in getting value from data. In several cases, the achievement of this value may pass through the augmentation of input data by resources such as Knowledge Graphs. The applicability of the above techniques strongly depends on the quality of input data and the satisfaction of other non-functional properties related to legal, ethical, and economical aspects. Building valuable and understandable data-driven systems has become a challenge, with the complexity of their design workflow. As a consequence, recent research efforts have striven to assist in designing valuable and explainable systems by making accessible not only the results of data analytical processes, but also the processes and the models to get them. The **Explainability** concerns every step of a software (system) design to allow designers, users, regulators, and citizens to achieve trust and accountability. For example, COVID-19 is an interesting example where **Explainability** was one of the important properties to convincing citizens to vaccinate themselves and to adopt prevention solutions.

This Special Issue seeks to bring researchers and scholars together to focus on the critical and current issues related **building valuable and explainable data-driven systems**. Our special issue solicits research papers that make new contributions to theory, methodology, and empirical results. Our proposed Special Issue is focusing on (but not restricted to) the following topics.

2. Topics

The special issue welcomes submissions of methodological, experimental, technical and application papers, and papers on experiences in Explainable Data-Driven Systems settings addressing - though not limited to - the following topics:

- Design, implementation, and management of large-scale data-driven systems

- Data Integration architectures and data processing workflows for large-scale data-driven systems
- Data quality and provenance in large-scale integration systems
- Data-driven decision support approaches and systems
- Managing machine learning models within database management systems
- Artificial intelligence in databases and information systems management
- Theoretical approaches of model explainability
- Explainability of artificial intelligence algorithms
- Evaluation (e.g., quantitative, human-based) and visualization of model explanations
- Model explanations in human-comprehensible language
- Explainable data-analytics systems for real-life applications (e.g., energy production and management, banking, healthcare, pandemic spread prediction models)
- Metrics for evaluation of the quality of explanations
- Metrics for evaluation the value of data-driven systems

3. Submission Form

This Special Issue will consist of: (1) the best submissions from an open Call for Papers, selected on a competitive basis, and (2) invited papers that are extended or modified versions of selected papers accepted from the 26th European Conference on Advances in Databases and Information Systems - ADBIS 2022 (<https://adbis2022.polito.it/>). In the latter case, the submission will be a substantial revision of the conference publication, and the authors will be required to submit a letter detailing the difference between their conference paper and the new version.

Diversity and Inclusion Statement

We support Diversity & Inclusion in our community; therefore, we kindly ask authors to adopt inclusive language in their papers. As an example, authors can consider the guidelines available at: <https://dbdni.github.io/pages/inclusivewriting.html>

4. Review Process

Every submission will be evaluated by at least two independent reviewers, using a review process and review standards of the Information Systems Frontiers journal, for regular submissions. The Editor-in-Chief, along with the guest editors, will make the final decision to accept or reject a submission, based on reviews.

Submissions must be written in proof-read English and submitted in the PDF format via the Editorial Manager of the journal:

<http://www.editorialmanager.com/clus/default.aspx>

To ensure that the manuscripts are correctly submitted to this special issue, an author must select "ADBIS'2022" as the "Article Type". Authors should aim at papers of approximately 20 to 40 pages (in the submission format), following the instructions available at the following address: <https://www.editorialmanager.com/isfi/default.aspx>

5. Important Dates

- December 20, 2022: Full article submission
- February 14, 2023: First round notification (minor/major revision)
- April 26, 2023: Submission of revised manuscript
- June 20, 2023: Final acceptance notification
- July 4, 2023: Camera-ready

6. Guest Editors

- Ladjel Bellatreche - LIAS/ISAE-ENSMA, France
- Tania Cerquitelli - Politecnico di Torino, Italy
- Silvia Chiusano - Politecnico di Torino, Italy
- Robert Wrembel - Poznan University of Technology, Poland

Ladjel Bellatreche is a full professor at National Engineering School for Mechanics and Aerotechnics (ISAE-ENSMA), Poitiers, France. He leads the Data and Model Engineering Team of the Laboratory of Computer Science and Automatic Control for Systems (LIAS). He is also part time professor at Harbin Institute of Technology - HIT (China) since 2019. He was a visiting professor of the Québec en Outaouais - Canada (2009), a visiting researcher at Purdue University - USA (2001) and Hong Kong University of Science and Technology, China (1997-1999). His research interest focuses on Data Management Systems and Semantic Web. He serves as an Associate Editor of the Data & Knowledge (DKE) Journal, Elsevier.

Tania Cerquitelli has been an associate professor at the Department of Control and Computer Engineering of the Politecnico di Torino, Italy, since March 2018. Her research activities have been mainly devoted to fostering and sharing research and innovation on automated data science and machine learning in different real-life settings, explainable artificial intelligence solutions, and interpretable predictive and descriptive modeling techniques. Tania has been involved in many European and Italian research projects addressing different research issues related to machine learning and data analytics for energy-related data and Industry 4.0. Tania has been a member of the editorial board of the Future Generation Computer Systems journal (Elsevier) and the Computer Networks journal (Elsevier) since March 2020. She has been serving on the program committee of some major international conferences (e.g., KDD since 2018, ECML-PKDD since 2017, ICDM since 2020) on data mining and machine learning research area. She got the master degree with honours in Computer Engineering (in 2003) and the PhD degree (in 2007) from the Politecnico di Torino, Italy, and the master degree with honours in Computer Science (in 2003) from the Universidad De Las Américas Puebla, Mexico.

Silvia Chiusano (PhD) is associate professor in computer engineering at the Politecnico di Torino, Italy. Her research interests focus on the design of innovative solutions for large-scale data management and mining with interest on health care, smart cities and healthy cities application domains. She served on the program committee of several international conferences and workshops on data mining research area (e.g., KDD, ICDM, ECML-PKDD, PAKDD). She is associate editor of "Computing" Journal (Springer) and member of the editorial board of "Internet of Things – Engineering Cyber Physical Human Systems" Journal (Elsevier). She was co-chair of the workshop track for the international conference ADBIS 2018. She organized, jointly with Tania Cerquitelli (Politecnico di Torino, Italy) and Genoveva Vargas Solar (CNRS, France), four editions of the DARLI-AP international workshop on data analytics for real-life applications co-located with the international conferences EDBT/ICDT (2020, 2019, 2018) and IEEE Smart data (2017). Silvia has been involved in many National

and European research projects addressing research issues in machine learning and data analytics in different application domains such as citizen security and urban mobility.

Robert Wrembel (PhD, Dr. Habil.) is an associate professor in the Faculty of Computing and Telecommunications, at Poznan University of Technology (PUT), in Poland. Specializes in databases and data warehouses; in the past involved in 8 research and 7 industrial projects in the area of data processing technologies; currently at PUT leading a project for the biggest Polish bank; currently external research expert in the French SuperRob ISITECAP20-25 project and in the DOGO4ML project supported by Ministerio de Ciencia e Innovación - Agencia Estatal de Investigación (Spain); visiting scholar in BI company Targit (USA) (2013); consultant at software house Rodan Systems (2002-2003); lecturer at Oracle Poland (1998-2005); PUT coordinator of Erasmus Mundus Joint Doctorate Information Technologies for Business Intelligence - Doctoral College (2013-2020). Visited numerous research and education centers, including: Universitat Politècnica de Catalunya - BarcelonaTech (Catalunya), Université Lyon 2 (France), Université de Tours (France), Universidad de Costa Rica (Costa Rica), Klagenfurt University (Austria), University of Maribor (Slovenia), Loyola University (USA), INRIA Paris-Rocquencourt (France), and Université Paris Dauphine (France). In 2010 received IBM Faculty Award for highly competitive research, in 2019 - IBM Shared University Research Award, and in 2019 - International Federation for Information Processing (IFIP) Service Award; represents Poland in IFIP Technical Committee TC 2 - Software: Theory and Practice; a chair of IFIP Working Group 2.6 (Database); a regular editorial board member of Data & Knowledge Engineering. In 2021 he has been honored with the designation of ACM Senior Member.