

The PPSN 2022 Workshop on Data Science, Machine Learning and Optimization in Support of the Society of the Future

To be held in conjunction with

The 17th International Conference on Parallel Problem Solving from Nature (PPSN XVII)

September 10-14, 2022 Dortmund, Germany

<https://ppsn2022.cs.tu-dortmund.de/>

Overview

Our societies are facing arduous global challenges to sustain and develop our civilizations. The development of new dedicated Intelligent Decision-Support Systems (IDSSs) could help address such challenges. Such developments can benefit from the current capabilities to collect data at an unprecedented level and by the amalgamation of novel techniques from Data Science (DS), Machine Learning (ML), Multi-objective Optimization (MOO), and Multi-criteria Decision-Analysis/Making (MCDA/MCDM). In this workshop, we aim to actively identify the challenges in developing and deploying IDSSs for the society of the future and discuss potential avenues to tackle them, with a particular focus on helping the decision-making process of policymakers. We are interested in studies on the development and/or application of computational techniques in the context of societal challenges. **The topics of interest include (but are not limited to):**

Techniques

- Search and identify satisficing strategies, and their trade-offs under competing objectives.
- Addressing uncertainty and time-varying data, predictions, and policies.
- Visualizing trade-offs between competing objectives.
- Surrogate-assisted exploration of decision alternatives.
- Interactive exploration of decision alternatives.
- Transfer learning and optimization: how can lessons from solving a problem help solve another?
- Multi-Criteria Decision-Analysis/Making (MCDA/MCDM) techniques for the development of IDSS.
- Models of societies such as compartments, networks, and multilayer networks.

Societal Challenges

- Effects of climate change (e.g., floods, landslides, desert expansion, forests' survival, and bio-diversity).
- Public health (e.g., addressing the health-economy dilemma of fighting a pandemic).
- Issues of population growth and urbanization.
- Fighting poverty and supporting the development of underdeveloped countries.

- Sustainable resource development, infrastructure, and waste management.
- Addressing natural & man-made disasters (e.g., earthquakes, floods, landslides, tsunamis, wars & terrorism).
- Dealing with practical costs of deploying solutions in the wild.
- Challenges in legislation, and relevant mitigating approaches.

Submission Instructions

We invite authors/participants to submit new ideas, positional statements, and reviews/summaries/comments/techniques on societal challenges to support the future society.

Submissions should be in the form of abstracts (200-300 words).

Please send your submission to: dsmlossf@gmail.com

Important Dates

- Abstract Submission: **July 31, 2022**
- Notification of Acceptance: **August 15, 2022**
- PPSN 2022 Conference: **September 12-14, 2022**

Note

The PPSN 2022 conference will be held "on-site" only. A hybrid format is not planned. In case of pandemic-caused restrictions, the event will be switched to a fully online format.

Organizers

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