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Soft Computing, Machine Learning and Optimization in
Civil, Structural and Environmental Engineering

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Structural optimization in the design, assessment and retrofitting of bridges

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Aims and scope:

Bridges play a fundamental role in transportation networks and represent civil engineering landmarks. The application of optimization techniques to bridge structures is a research topic of growing interest with an increasing number of publications in the last decade. Bridge design is a challenging task which involves a large number of design parameters and solving some complex problems, such as: construction stages, geometrical non-linear effects, concrete time-dependent effects, the structural response under static loading, wind action, seismic action and other dynamic effects. Optimization techniques are an efficient way to process the large amount of information aiming at structurally efficient, sustainable, robust and resilient design. Furthermore, optimization algorithms are also adequate for structural health monitoring and assessment of existing bridges, design and location of control devices to enhance the dynamic performance.

This special session aims to gather experts from different countries presenting recent advances in optimization-based approaches for solving problems concerning the design, assessment and retrofitting of bridge structures. Therefore, it is expected to promote the exchange of experience and knowledge, as well as, the discussion about expected future developments in these topics.