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Computation

SPECIAL
SESSIONS

EVOLUTIONARY COMPUTATION IN ARCHITECTURAL DESIGN

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Architecture has a profound impact on the environment that we spend much of our daily lives in. As such, it is important that the outcomes of architectural design are well performing and suitable for their intended purpose. Architectural design is a process of high complexity, which aims to satisfy design goals comprising hard, engineering aspects, together with soft, perceptual and cognitive ones. Due to the excessive complexity of the design task, human cognition alone is often insufficient to ensure suitable outcomes. Computational Intelligence and Soft Computing methods can aid in confidently arriving at high-performing architectural design solutions, as well as provide valuable inspiration during the design process. As such, these methods are high on the contemporary scientific agenda.

The majority of architectural design problems involve real-valued decision variables and multiple objectives. For these reasons, they prove to be an ideal field for Multi-Objective Real-Parameter Constrained Optimization applications of soft computing and computational intelligence methods such as Evolutionary Algorithms, machine learning, fuzzy logic, simulation etc. These methods are capable of navigating complex design spaces, such as those encountered in architectural design problems, and identifying best tradeoff solutions.

This session aims to put forward original contributions, latest research and development, and contemporary issues in the field of soft computing and computational intelligence for architectural and building design. It intends to collect a series of innovative, high quality papers on ideas, concepts, and technologies that make use of evolutionary algorithms in these research areas. Proposed submissions should be original, unpublished, and present novel fundamental research contributionsfrom a theoretical or an application point of view.

Topics

- Evolutionary Computation and Multi-Objective Optimization in Architectural and Urban Design.

- Surrogate Modelling and Meta-models in Sustainable Architectural Design
- Modeling of Fuzzy and Imprecise Design Aspects
- Soft Computing in Spatial, Formal and Color Perception
- Cognitive Models for Supporting Design Decisions
- Applications in Practice: Urban Design
- Applications in Practice: Large Scale Structures and Complexes
- Soft Computing and Architectural education