

Track Proposal: Soft Computing for Analysis of Data of Smart Buildings

Soft Computing (SC) techniques can be used to tackle problems characterized by imprecision, uncertainty and partial truth to achieve tractability and robustness at a low computational cost.

These features represent the main differences between SC and hard computing techniques, and provide SC strategies the ability to deal with **ambiguous** situations like **imprecision** and **uncertainty**. For this reason, SC techniques can obtain approximate solutions to problems which have no known methods to compute an exact solution. The main SC paradigms include Fuzzy Systems, Evolutionary Computation, Artificial Neural Computing, Metaheuristics and Swarm Intelligence.

Those features render SC particularly suitable for analyzing data produced by smart buildings, i.e. buildings equipped with the latest technological and architectural solutions, controlled by Building Management Systems (BMS), operating in fulfillment of the typical goals of increasing occupants' comfort and reducing buildings' energy consumption.

BMSs usually produce a high volume of data, and such data is typically characterized by imprecision and/or the presence of noise. Moreover, SC techniques allow to easily integrate human knowledge, which can help achieve better solutions when analyzing the large amount of data generated by the building management systems. This data can then be processed to obtain insights on the behavior of smart buildings.

The overall aim of this track is to compile the latest research and development, up-to-date issues, and challenges in the field of SC and its applications to the analysis of data produced by smart buildings. Potential topics include but are not limited to the following:

- Detecting anomaly in the data
- Controlling the comfort level of the environment
- Optimizing resource usage
- Reducing CO2 emissions
- Automatic detection malfunctioning sensors
- Improving energy efficiency of buildings
- Time series forecasting for smart building data
- Real time data analytics
- Efficient data management
- Safety aspects of buildings
- Entertainment, Ambience, Multimedia
- Data enrichment and transformation for pattern analysis

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