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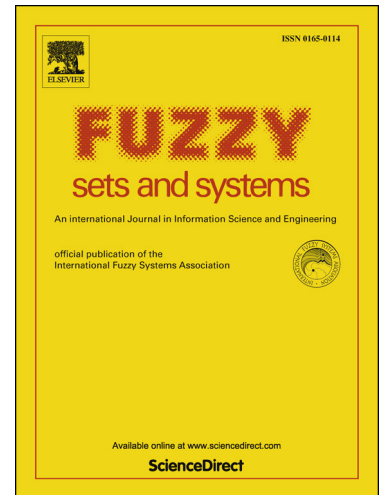
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A Fuzzy Expert System Architecture For Data And Event Stream Processing

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Abstract

The Internet of Things was born from the proliferation of connected objects and is known as the third era of information technology. It results in the availability of a huge amount of continuously acquired data which need to be processed to be more valuable. This leads to a real paradigm shift: instead of processing fixed data like classical databases or files, the new algorithms have to deal with data streams which bring their own set of requirements. Researchers address new challenges in the way of storing, querying and processing those data which are always in motion.

In many decision making scenarios, fuzzy expert systems have been useful to deduce a more conceptual knowledge from data. With the emergence of the Internet of Things and the growing presence of cloud-based architectures, it is necessary to improve fuzzy expert systems to support higher level operators, large rule bases and an abundant flow of inputs.

In this paper, we introduce a modular fuzzy expert system which takes data or event streams in input and which outputs decisions on the fly. Its architecture relies on both a graph-based representation of the rule base and the cooperation of four customizable modules. Stress tests regarding the number of rules have been carried out to characterize its efficiency.

Keywords: Fuzzy expert system, complex event processing, data stream

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