Concept Reduction Methods

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Abstract <To be prepared>

1 The Motivating Problem

The title of Adrienn Buruzs's PhD thesis [1] is "Evaluation of Sustainable Regional Waste Management Systems with Fuzzy Cognitive Map". As the title suggests, she analyzed the internal driving forces, dynamic behavior and sustainability of Integrated Waste Management Systems (IWMSs), which are very complex systems including many aspects (environmental, economic, social, institutional, legal and technical) and stakeholders. Even at an early stage of her investigations became apparent that Fuzzy Cognitive Maps (FCMs) are appropriate tools to describe the large number of interacting and coupled entities and it copes with the inherent uncertainties of the system. At first, she created a new FCM model [2], which contains six main factors. These factors were identified on the basis of the literature and represented by the concepts of the FCM. The strength of relationships among concepts were defined by the results of a survey filled out by 75 stakeholders. The simulation results provided by FCM were validated later in [3]. Time series data were collected based on the relevant literature and it served as the input of a Bacterial Evolutionary Algorithm to learn the connection weights among the already specified concepts. The goal of optimization was to find an FCM that generates as similar time series as possible. Unfortunately, a strong contradiction was explored between the models created by experts and machine learning.

Acknowledgements If you want to include acknowledgments of assistance and the like at the end of an individual chapter please use the `acknowledgement` environment – it will automatically be rendered in line with the preferred layout.

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References

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