



Contribution ID: 59

Type: **not specified**

Segmentation and clustering new types of data in metric space

Wednesday, June 29, 2022 10:20 AM (20 minutes)

One of the challenges of the industrial revolution taking place today is the fact that engineers are increasingly faced with the need to deal with new types of data, which are significantly different from ordinary numerical data by virtue of their nature and the operations that can be performed with them (spectrograms, for example). Basic concepts related to processing of such data, e.g.: data similarity, data fusion, measurement analysis, variation analysis need to be thoroughly rethought. In their previous publication the authors suggested a common approach to processing such data types based on the idea of defining the distance metric between objects for the appropriate data space (digital twin). This paper discusses two main aspects related to the segmentation and clustering of objects/processes described by such data. The first of them is devoted to methods for assessing quality of data segmentation, based on the analysis of generalized total variation decomposition into inter and intra connected components. The second is devoted to the idea of self-clustering by help of attraction-repulsion algorithm supplemented by an artificial "data shaking" mechanism. The proposed methods will be illustrated with specific examples, their advantages and disadvantages will be discussed..

Keywords

analysis of variation; data clustering

Primary authors: Dr MARMOR, Yariv (ORT Braude College of Engineering); Prof. BASHKANSKY, Emil (ORT Braude College of Engineering)

Presenters: Dr MARMOR, Yariv (ORT Braude College of Engineering); Prof. BASHKANSKY, Emil (ORT Braude College of Engineering)

Session Classification: CONTRIBUTED Modelling 6

Track Classification: Modelling