

On Machine Learning New Technology for the Prediction Problem of Expert Knowledge Stream

Gia Sirbiladze

gia.sirbiladze@tsu.ge

Department of Computer Sciences
Faculty of Exact and Natural Sciences
Iv. Javakhishvili Tbilisi State University
University str., 13, Georgia

This work deals with the problems of analyzing and synthesizing of expert evaluations of the complex and/or extreme evolutionary system - so called expert knowledge streams (ENS). Such processes are called as weakly structured processes, when the relations between the objects of the evolutionary system are constructed on the basis of expert knowledge due to the lack or lack of objective information. The use of ENS modeling is relevant today to the study of complex and anomalous events in society and nature. E.g. Innovative engineering tasks, problems with data science, the complexities of economics and business, and more.

A recursive, extreme (pessimistic-optimistic) dynamic model with respect to time is constructed. The tool of aggregation is the Sugeno-type integral. For the approximate estimation of the model's transformation operator as system classifier a machine learning based genetic algorithm is developed.

The prediction problem for the knowledge stream is formulated. The notion of an optimal stopping for the identification prediction results is explained. A realistic prediction example for a knowledge stream is discussed.