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DEVELOPMENT OF AN OPTIMIZED FORECASTING ALGORITHM USING PARTICLE SWARM OPTIMIZATION (PSO) AND K-MEANS CLUSTERING ALGORITHM

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Abstract

Most of the fuzzy forecasting methods based on fuzzy time series used arbitrary number of intervals and static length (same length) of intervals. The drawback of the arbitrary number of intervals and static length of intervals is that the historical data are roughly put into intervals, even if the variance of the historical data is not high. In this paper, we present optimized method for forecasting enrolments based on Fuzzy Time Series using Particle Swarm Optimization and K-Means clustering (PSO-KM). To verify the effectiveness of the proposed model, the empirical data for the enrolments of the University of Alabama was illustrated, and the experimental results show that the proposed model outperforms existing forecasting models with various orders and different interval lengths.

Keywords: Fuzzy time series, forecasting, Fuzzy logic relationship, K-means clustering, enrolments, Particle swarm optimization.

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