عنوان مقاله:

Forecast of biofuel production using a novel hybrid ensemble methodology

محل انتشار:

دومین کنفرانس تحقیقات کاربردی علوم انسانی در مدیریت، مهندسی صنایع، اقتصاد و حسابداری (سال: 1402)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Abolfazl Rasekh - *Department of Industrial Engineering, Amirkabir University of Technology, Tehran, Iran*

Seyyed Mohammad Taghi Fatemi Ghomi - *Department of Industrial Engineering, Amirkabir University of Technology, Tehran, Iran*

خلاصه مقاله:

As one of the essential sources of energy, an accurate forecast for renewable energy, such as biofuels, can effectively guarantee the rapid development of new products with higher production quality and the control of the energy market. Based on this, estimating fuel energy production is vital. The current study aims to forecast biofuels' production with by method a hybrid ensemble forecasting methodology that includes empirical mode decomposition (EMD), long short-term memory (LSTM) and support vector regression (SVR). A current model hybrid ensemble includes four primary steps: data decomposition, component reconstruction, and individual and ensemble prediction, respectively, by methods: EMD, a fine-to-coarse, LSTM and SVR, and simple addition. For illustration and validation purposes, the suggested hybrid ensemble is utilized to forecast the biofuel monthly production data of the USA and is used as sample data. Empirical results exhibit that the proposed model statistically outperforms all benchmark models regarding forecasting accuracy. The EMD-LSTM-SVR models have been proven competitive for the prediction time series with high volatility and irregularity.

کلمات کلیدی:
Hybrid ensemble forecasting, Time series, Biofuel

لینک ثابت مقاله در پایگاه سیویلیکا: