

54th CIRP Conference on Manufacturing Systems

Deep Fusion for Energy Consumption Prediction in Additive Manufacturing

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Abstract

Owing to the increasing trend of additive manufacturing (AM) technologies being employed in the manufacturing industry, the issue of AM energy consumption attracts attention in both industry and academia. The energy consumption of AM systems is affected by various factors. These factors involve features with different dimensions and structures which are hard to tackle in the analysis. In this work, a data fusion approach is proposed for energy consumption prediction based on CNN-LSTM (convolutional neural network and long short-term memory) model. A case study was conducted on an SLS system by using the proposed methodology, achieving the RMSE of 8.143 Wh/g in prediction.

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Peer-review under responsibility of the scientific committee of the 54th CIRP Conference on Manufacturing System

Keywords: Additive Manufacturing; Data Fusion; Energy Consumption; Machine Learning; Convolutional Neural Network
