

# Comparison of artificial neural network, fuzzy logic and genetic algorithm for cutting temperature and surface roughness prediction during the face milling process

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## ABSTRACT

This paper shows the possibility of applying artificial intelligence methods in milling, as one of the most common machining operations. The main goal of the research is to obtain reliable intelligent models for selected output characteristics of the milling process, depending on the input parameters of the process: depth of cut, cutting speed and feed to the tooth. One of the problems is certainly determining the value of input parameters of the processing process depending on the objective function, i.e. the output characteristics of the milling process. The selected objective functions in this paper are the temperature in the cutting zone and arithmetic mean roughness of the machined surface. The paper examines the accuracy of three models based on artificial intelligence, obtained through artificial neural networks, fuzzy logic, and genetic algorithms. Based on the mean percentage error of deviation, conclusions were drawn as to which of the three models is most adequately applied and implemented in appropriate process systems, which are based on artificial intelligence.

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