Prediction of Surface Roughness in CNC Turning Process using Adaptive Neural Fuzzy Inference System

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ABSTRACT

This paper presents the methodology of surface roughness inspection in the CNC Turning process. Adaptive Neural Fuzzy Inference System classifier can predict the high accuracy roughness value by insisting on surface roughness image. The vision system captures the image and determines the mean value by using the ANFIS algorithm. Training sets variables speed, depth of cut, feed rate, and mean value are feed as the input, and manual stylus probe surface roughness value is feed as the output. After the simulation process, the testing input was performed, and finally getting the vision measurement value. This higher accuracy (above 95%) and low error rate (below 4%) can be achieved by using the ANFIS classifier, which is predominantly helpful for the industry to measure surface roughness. Assign the quality of the product by evaluating the manual stylus probe and vision measurement value.

Keywords : CNC Turning; Al6063; Adaptive Neural Fuzzy Inference System classifier; Stylus Instrument; Vision Measurement.

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