

MODELLING OF MACHINING PARAMETERS TO PREDICT THE SURFACE
ROUGHNESS USING MULTIPLE REGRESSION AND NEURAL NETWORK

By

Laurentius Soni Kurniawan
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SWISS GERMAN UNIVERSITY

SWISS GERMAN UNIVERSITY
The Prominence Tower
Jalan Jalur Sutera Barat No. 15, Alam Sutera
Tangerang, Banten 15143 - Indonesia

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L. Soni Kurniawan

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

Laurentius Soni Kurniawan

Student

Date

Approved by:

Dena Hendriana, BSc., S.M., Sc.D

Thesis Advisor

Date

Dr.(Cand) Aulia Arif Iskandar, S.T., M.T

Thesis Co-Advisor

Date

Dr. Irvan Setiadi Kartawiria, S.T., M.Sc

Dean

Date

L. Soni Kurniawan

ABSTRACT

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By

Laurentius Soni Kurniawan
Dena Hendriana, BSc., S.M., Sc.D Advisor
Dr.(Cand) Aulia Arif Iskandar, S.T., M.T, Co-Advisor

SWISS GERMAN UNIVERSITY

Surface roughness plays an important role in a machining product especially for the functional requirements of the part. Currently, the machining process to produce a quality product is very complex, so it will be difficult to develop a comprehensive model that includes all cutting parameters. In this study, surface roughness of the workpiece with S45C material will be measured as a result of a turning machining process with different cutting parameters including cutting speed, feed rate and depth of cut. Multiple regression approaches and neural networks model are used as tools for modeling the surface roughness resulting from the turning process. The result of the Multiple Regression approach and the Artificial Neural Network model will be compared using the statistic method to determine the level of prediction accuracy. In this study the multiple regression approaches have more accurate prediction than artificial neural network model.

Keywords: surface roughness, multiple regression, artificial neural network.



DEDICATION

to

Yohana Aprinita Astiwi

ATMI Cikarang



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