



54th CIRP Conference on Manufacturing Systems

Adaptive, predictive machine condition assessment for resilient digital solutions

Manja Mai-Ly Pfaff^{a*}, Felix Dörrer^a, Dr.-Ing. Uwe Friess^a, Dr.-Ing.
Michael Praedicow^a, Prof. Dr.-Ing. Matthias Putz^a

^a*Fraunhofer IWU, Reichenhainer Str. 88, 09112 Chemnitz, Germany*

* Corresponding author. Tel.: +49-371-5397-1394. E-mail address: manja.mai-ly.pfaff@iwu.fraunhofer.de

Abstract

Current developments illustrate the need for resilient value creation, however the former persistent trend of constantly changing production environments also requires adaptive and self-learning tools. Although digitization solutions already exist, these are often specialized methods for a specific problem, based on a large amount of data. Instead, the novel approach explained here enables the direct and immediate interpretation of characteristic values for predictive condition assessment with small amount of data. An adaptive algorithm was developed and tested in a real environment, which performs a dynamic limit value formation using an adaptive characteristic value segmentation.

© 2021 The Authors. Published by Elsevier B.V.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

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

Keywords: adaptive algorithm; machine learning; predictive maintenance; structure based segmentation; probabilistic causalities; small amount of data
