Machine learning applied in production planning and control: a state-of-the-art in the era of industry 4.0

Access to new resource related to AI and Industry 4.0 added to PMWL

Resource provided by [Balzhan Khamitova](#)

27 July 2022 – Almaty, Kazakhstan – Access to a new resource has been added to the PM World Library (PMWL) related to Project Planning. The new resource titled **"Machine learning applied in production planning and control: a state-of-the-art in the era of industry 4.0"** is a paper by Juan Pablo Usuga Cadavid, Samir Lamouri, Bernard Grabot, Robert Pellerin and Arnaud Fortin published in the Journal of Intelligent Manufacturing in January 2020.

Machine learning has become attractive for solving various manufacturing problems thanks to the advent of Industry 4.0, as data has become available in large quantities, computing power has become higher and storage capacity has increased. Also, given the expansion of planning and production control functions, it can lead to a global improvement in production systems.

In this article, the authors presented the state of the art in machine learning-assisted production planning and control (ML-PPC). To do this, the authors conducted a systematic literature review in which they analyzed 93 recent research articles.

This study has two main objectives: 1) to contribute to the definition of the methodology for the implementation of the ML-PPS; 2) propose a comparison for the classification of scientific literature for future research perspectives.

To achieve the two objectives of the study, a systematic literature review and bibliometric analysis were carried out. The literature review focuses exclusively on applications of machine learning in production planning and control in context of I4.0, while bibliometric analysis was conducted on big data applications in different sectors as healthcare, supply chain, finance, etc.

Results concerning the activities allowed the recognition of eleven recurrent tasks that are employed to create a ML-PPC model. They were grouped in four clusters following their use percentage: CUAs (Commonly Used Activities), OUAs (Often Used Activities), MUAs (Medium Use Activities), and SUAs (Seldom Use Activities). From these clusters, it can be concluded that activities belonging to the CUAs and OUAs clusters are well documented in the scientific literature. MUAs activities mainly contain data pre-processing tasks, which are necessary but not commonly documented by researchers. Finally, the SUAs cluster suggests that there are three activities rarely addressed in literature.

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For PMWL Post

Usuga Cadavid, J.P., Lamouri, S., Grabot, B. et al. (2020). **Machine learning applied in production planning and control: a state-of-the-art in the era of industry 4.0.** Journal of Intelligent Manufacturing 31, 1531–1558. https://doi.org/10.1007/s10845-019-01531-7. Available online at https://link.springer.com/article/10.1007/s10845-019-01531-7#citeas (Khamitova)

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