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AR based Assistance for the Tool Change of Cyber-Physical Systems

Benjamin Röhm[a,*], Johannes Olbort[a], Reiner Anderl[a]

[a]*Otto-Berndt-Strasse 2, Darmstadt, 64287, Darmstadt*

* Corresponding author. Tel.: +49-6151-16-21847; fax: +49-6151-16-21793. *E-mail address:* roehm@dik.tu-darmstadt.de

Abstract

The Department of Computer Integrated Design at the TU Darmstadt deals with new innovative interaction possibilities between workers and Cyber-Physical Systems on the shop floor. In this paper, technologies of Augmented Reality play an essential role. Thus, a digital workflow between product development, planning and production can be established. For this purpose, a concept for AR-based assistance for the tool change of a CNC machine was developed. Based on the processed instructions for a workpiece, information for a complete tool change is progressively provided to the operator. The concept was implemented and validated using a Microsoft HoloLens and a 3-axis CNC milling machine.

Keywords: Augmented Reality; Cyber-Physical System; CNC Milling Machine; HMI