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Image-based state tracking in Augmented Reality supported assembly operations

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Abstract

Visual tracking and holographic information representation techniques have become robust enough to support operators in complex tasks on the shop floor. This paper presents an approach for coupling AR-supported assembly task instructions with image-based state tracking, so as to assist the operators in product assembly operations. The developed system consists of a visualization platform for AR-supported assembly instructions, a state tracker that includes object recognition, localization and hand tracking, using deep neural networks, and a server that handles the data exchange between the two. The developed framework is applied and validated in an industrial use case.

Keywords: Augmented reality; Assembly; State tracking; Neural network; Object recognition