

# News Release

## **Human centered maintenance and repair technology using AI, AR and Human Activity Recognition**

**Düsseldorf, 17th July 2019**

Nowadays, maintenance & repair (M&R) industry is facing challenges such as shortage of skilled workers and increased complexity of machine maintenance operations. On one hand, it has become increasingly important to assist maintenance workers not only in the training phase, but also in the operation phase to handle various and sometimes complex maintenance task in specific manufacturing environment to ensure work quality and efficiency. On the other hand, know-how and best practice of skilled maintenance workers have become a key value-creating asset, not only for service providers but also for machine manufactures, because such precious information is the key source for further improving machine performance and optimizing maintenance process.

In this context, Hitachi developed an AI (Artificial Intelligence) and AR (Augmented Reality) based maintenance & repair technology for providing maintenance assistance to human workers adapted to machine working status, and for optimizing maintenance process according to various worker skills and adapted to machine working context.

This technology performs real-time, AI based recognition of machine working status based on sensor data in order to predict the potential machine failure with remaining useful life. This technology also automatically generates digitalized maintenance logs including machine specific context information related to man, machine, material, and method information. Such digitalized maintenance logs will allow service providers and machine manufacturers to optimize the maintenance process which is best suitable to each machine in each working environment. Last but not least, by combing the optimized maintenance process and machine status recognition, the optimized maintenance steps are automatically generated and provided to maintenance workers by IoT based AR applications.

One of the key technical components of this technology is the AI based human worker

activity recognition (HAR) technology which has been developed by Hitachi previously<sup>1</sup> as one of the outcomes of collaboration with German Research Center for Artificial Intelligence GmbH (DFKI). This HAR technology provides the possibility to flexibly recognize human worker's activities with no or few efforts to collect and train the data for each environment, compared to other human activity recognitions technologies e.g. based on camera sensors. Thanks to this HAR, the developed M&R technology is able to include an easy-to-deploy application providing correction suggestions to maintenance worker in case of error (e.g. not wearing protection glass), and to recognize man-related information which should be included in maintenance log generations.

Hitachi has been validating this technology on Hitachi's Industrial Inkjet Printer<sup>2</sup> product. Hitachi will exhibit part of this technology at the Fachpack in Nuremberg – hall 4, stand 223.

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<sup>1</sup>[http://www.hitachi.eu/sites/default/files/fields/document/press-release/newsrelease\\_20170308\\_dfki\\_hitachi\\_eng.pdf](http://www.hitachi.eu/sites/default/files/fields/document/press-release/newsrelease_20170308_dfki_hitachi_eng.pdf)

<sup>2</sup><https://codingsolutions.hitachi-industrial.eu/>

**Image requests** - please contact the following address:

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*We will provide you the required footage.*

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