
Press release

Workplace ergonomics: Camera identifies unhealthy movements

Researchers in Hannover develop ergonomics evaluation system /
Workers get real-time feedback

Hannover, 24 April 2017. "Attention: Movement causes back pain" – this could be the warning of a future digital assistant. Researchers in Hannover are about to develop a camera system which observes assembly workers and warns them of unergonomic movements. Companies can use the system to maintain their employees' productivity permanently. The researchers are still looking for partner companies to carry out first field tests.

Back pain, knee problems, tenosynovitis: Wrong movements at work may cause permanent illness. To protect workers, researchers from Hannover are currently developing an ergonomics evaluation method: 3D cameras are to identify movement patterns and help correct unhealthy postures.

What is special about the new approach: The ergonomics evaluation is exclusively based on real-time camera data. Up to now, it is very complicated to analyse and assess movement patterns in the daily work routine of a factory. The workers have to wear full length body suits with markers, so that the computer can recognize the position of hands, elbows and shoulders. This is inconvenient during work. In contrast, the new system is projected to go entirely without markers and sensors and just uses 3D cameras to identify body and hands.

In addition, the novel technology is able to analyse and evaluate movements immediately. State-of-the-art systems can just tape and process videos. Afterwards, an expert has to evaluate the video tape, in order to assess the ergonomics of the movements. This is expensive for the companies and unfavourable for the workers, since they have to wait for a feedback for days or even weeks. The new camera system is able to analyse movements automatically – in real time. It identifies unergonomic movements and also proposes alternatives. In this way, workers get direct feedback and can correct their unhealthy movements or postures immediately.

With the new system, companies are in the position to maintain the workforce of their staff permanently. Correct movements can be practised already during the initial job training and are checked consistently. In this way, assembly workers keep much longer fit, get less quickly tired and fall less frequently sick – an important factor for companies in times where responsibility for workers health may become expensive.

The new technology makes ergonomics evaluation also profitable for small and medium-sized companies. Since no full motion capturing body suit or inertia sensors or even an expert assessment are required, evaluation may well come at a lower price. Another advantage is that just one camera system is needed to evaluate all assembly workplaces. "We are developing a mobile system. As soon as a worker has adopted the correct movements, the cameras can be removed and installed at another

assembly workplace”, says Sebastian Brede, project manager at the Institut für Integrierte Produktion Hannover gGmbH (IPH).

Within the scope of the research project “WorkCam – Real-time-capable camera-based ergonomics assessment and development of measures for the assembly process”, IPH is cooperating with the Institute of Production Systems and Logistics (IFA) of Leibniz Universität Hannover. While researchers at IFA are concentrating on ergonomics assessment, IPH is responsible for the development of the camera system and the evaluation of 3D data. The project has started on 1 April 2017 and will continue until end of March 2019 – by then, the researchers want to develop a prototype of the camera system and get it tested with partner companies.

Companies interested in ergonomics evaluation, who want to test the system in the field, have still the opportunity to participate in the project. Please contact Sebastian Brede under (0511) 279 76-225 or send an email to brede@iph-hannover.de.

Further information on the research project are available under www.workcam.iph-hannover.de.

About the IPH

The Institut für Integrierte Produktion Hannover (IPH) gemeinnützige GmbH (which literally translates into Hannover institute of integrated production) is a service provider for production technology and was established in 1988 at the Leibniz University in Hannover. The IPH offers research and development, consultation and qualification concerning the subjects of process technology, production automation, logistics and XXL products. Its customers include companies from the sectors of tool and mould construction, machine and plant construction, aerospace and the automotive industry, electro industry and forging industry.

The business has its headquarters in the science park Marienwerder in the northwest of Hannover and currently employs 65 people, of which 26 are scientific personnel. (Status: February 2017).

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Photo material



Exhausting overhead assembly tasks: In order that workers stay healthy as long as possible, ergonomic movements are of great importance. Researchers of Hannover are developing a system which identifies and corrects unhealthy postures. (Photo: [Department for Business, Innovation and Skills](#) / [Creative Commons](#))



Workplace ergonomics: Even delicate work can cause physical strain. Direct feedback shall help training healthy movement patterns and, for example, prevent back pain. (Photo: CC0 Public Domain)



New research project: 3D cameras provide for real-time recording of work sequences, identify unergonomic movements and propose alternatives. (Photo: IFA – Institute of Production Systems and Logistics)