Fraunhofer IGD

FRAUNHOFER INSTITUTE FOR COMPUTER GRAPHICS RESEARCH IGD

PRESS RELEASE

New for Learntec

Fraunhofer IGD presents VR training environment with coaching function and stress measurement

Fraunhofer IGD at LEARNTEC
Karlsruhe, Germany

May 23-25, 2023

Hall 2, Booth J38

At this year's Learntec, Fraunhofer IGD will be demonstrating its VR training environment, Machine@Hand. This integrated authoring tool enables instructors to readily create individual training sequences without the need for programming knowledge. During the training session, the instructor can monitor the trainee's vital data in real time to gauge stress levels and to adapt the training to the individual learner.

An ambulance is called to the scene of an accident. The crew has to pull the victims to safety and administer first aid, which means being able to quickly assemble the necessary materials and knowing precisely what to do. The procedures require repeated rehearsal and can only be implemented in a real-life scenario with great skill and effort. The Machine@Hand VR learning environment developed by the Fraunhofer Institute for Computer Graphics Research IGD not only enables repeat training in various procedures, it also includes a user-friendly authoring tool which enables instructors to easily create their desired training scenarios and store instructions for action. In this way, they can set up individually tailored training courses without having any knowledge of programming and in a minimum of time. The training content is supplemented by text matter and/or additional information. A wide variety of elements sourced from a large number of libraries can be combined to create complex learning scenarios. This allows easy integration into existing e-learning workflows and complements existing authoring tools with an effective VR component.

VR training with real-time vital data display

In the latest enhancements to the software, the researchers have focused on the issues of stress and strain. "Having to perform an action under time

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pressure, as in a rescue operation, inevitably causes stress," explains Head of Department Dr. Mario Aehnelt. "That's when it is especially important to keep a cool head and perform the sequences as previously rehearsed more or less automatically." In the course of a training session in Machine@Hand, an instructor can observe the trainee live as an avatar, track each action precisely and evaluate it in terms of sequence and execution. The real-time display of vital data also gives an idea of how much pressure the trainee is under during the session. The coach can actually intervene in the session and change its intensity. A medically certified vital data tracker is connected to the program and records heart rate, skin conductance and skin temperature as three of the key indicators of stress. This will be the first time that Fraunhofer IGD has demonstrated a VR training environment with integrated stress measurement and vital data display. The environment is suitable both for the learning phase, in which the trainees rehearse complex action sequences according to step-by-step instructions, and for the subsequent test phase, in which the learned content must be recalled and a training protocol produced for joint evaluation.

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The Fraunhofer IGD team and its partners – DRK-Kreisverband Gütersloh e.V. and twinC© – will be operating a joint booth in the VR/AR Area of Hall 2 at Learntec in Karlsruhe. Here, they will be presenting their training environment with real-time vital data acquisition for the first time. Visitors can immerse themselves in the training world with VR goggles and vital data tracker. They can also see for themselves how effortlessly training scenarios can be created or modified in the editor.

Machine@Hand is also already being used successfully in other industries for technical training on complex machine structures. Interested companies can purchase a test license.

For more information:

www.igd.fraunhofer.de/en/products/automotive/machine-hand-virtual-training.html

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Image: In the Machine@Hand VR training environment developed by Fraunhofer IGD, the instructor can follow the training process in real time and draw conclusions about the trainee's stress levels from his or her vital data. (© Fraunhofer IGD, AdobeStock – standret)

About Fraunhofer IGD

Since 1987, the Fraunhofer Institute for Computer Graphics Research IGD has been setting international standards for applied research in visual computing, the branch of computer science that deals with images and 3D models. We transform information into images as well as images into information, and we support industry and business in their strategic development. Keywords here are human-machine interaction, virtual and augmented reality, artificial intelligence, interactive simulation, modeling, 3D printing and 3D scanning. Around 180 research staff at the three sites in Darmstadt, Rostock and Kiel are generating new technological application solutions and prototypes for Industry 4.0, digital healthcare and the smart city. Our products take on international relevance through our partnership with the sister institute in Graz and Klagenfurt. Our matrix organization enables us to serve our clientele from a wide range of industries with technical and competitive services relevant to their needs. For this purpose, we have assembled cross-functional teams of experts with extensive industry experience, who also take on planning, management and evaluation responsibilities for projects of any magnitude.

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