![Fraunhofer IGD logo]

FRAUNHOFER INSTITUTE FOR COMPUTER GRAPHICS RESEARCH IGD

PRESS RELEASE

Hannover Messe 2019
Digitally assisted worlds of work

(Darmstadt/Hanover) **Fraunhofer IGD is presenting its IT solutions for digitized industry at Hannover Messe 2019. At two stands, the leading research institute for visual computing is demonstrating smart data analysis, interactive simulation solutions and AR applications for the construction industry.**

Industrial intelligence optimizes operating states

At this year's Hannover Messe trade fair, the Fraunhofer Institute for Computer Graphics Research IGD is presenting Data@Hand, an AI-based information and data tool for optimizing industrial process chains. Based on machine learning, data is evaluated faster and anomalies detected earlier. Connecting to the cloud and using artificial intelligence makes it possible to detect deviations from the normal operation of a system without the pattern ever occurring in that particular system. Data@Hand grows continuously, learning how to recognize normal states and deviations by itself, and making it possible to respond to operating states that have never occurred before. Automated analyses can be performed directly on the machine not only with a powerful, server-based platform but also with the smallest mobile systems. Hannover Messe will have a demo of how smart analysis and visualization of critical states can produce real added value from simple data collection. The obtained data can be used not only to analyze the cause of problems but also to predict malfunctions.

Interactive simulation accelerates design process

With RISTRA (Rapid Interactive Structural Analysis), Fraunhofer IGD is presenting a GPU-based structural mechanics solution that accelerates component simulation and optimizes the design process. It started with a vision of using simulation to assist in the design of a component while at the same time testing its stability, all in a single work step. The direct feedback leads to an intuitive work method and better results, not only in terms of required development time but also in terms of design quality, since several iterations are possible on the path toward the optimal design. In a comparison test, RISTRA computed a model with more than 1.3 million finite elements more than 80 times faster than a commercial simulation software program. The software tool can significantly accelerate design and engineering processes by pushing all simulation computing onto the graphics card. The effects of given loading cases on the component's structure are visualized in false color in near-real time. The software was firtst licensed by Meshparts GmbH.

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Uniform software standards support connected construction projects

To assist in fully digital project management for planning, constructing and managing buildings, the BIMSWARM project developed a platform for easily connecting different applications, services and content. The focus is on making it easy to choose and combine different software tools for one-off business partnerships, which are common especially in the construction industry. The platform suggests suitable tools depending on the circumstances, thereby helping avoid differing software standards within a partnership. Fraunhofer IGD has implemented its visualization and tracking services in the platform using its instant3Dhub technology, which can format and process large data models is an extremely short time—making it possible to compare reality to the CAD model of the building in real time and open various possibilities. Developers can create building progress documentation in the form of ad hoc planned/actual comparisons, evaluate them and communicate them to everyone involved. A planned ticket system gives installers specific instructions for a building system and transparently documents progress. The use of augmented reality (AR) in various stages of construction, from planning to maintenance, is made easy, even on a tablet, thanks to Fraunhofer IGD's compression and visualization performance. The BIMSWARM sponsorship project is part of the technology program "Smart Service World II", which is funded by the German Federal Ministry for Economic Affairs and Energy.

Fraunhofer IGD at Hannover Messe 2019
April 01–05, 2019

Fraunhofer-Gesellschaft joint stand
Hall 6, Stand A30

Stand of the Federal Ministry for Economic Affairs and Energy **Hall 2, Stand C28**

More information:
www.igd.fraunhofer.de/en/veranstaltungen/hannover-messe-2019
www.igd.fraunhofer.de/en/press/news/datahand-optimizing-processes-most-various-applications-ai
www.igd.fraunhofer.de/en/press/news/design-simulation-redefined
www.igd.fraunhofer.de/en/press/news/construction-40-digital-connected-and-certified

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Image (M): Data@Hand uses artificial intelligence to detect and analyze deviations from a machine's normal operation. (© Fraunhofer IGD)

Institute Profile

Founded 30 years ago, Fraunhofer IGD has become the world's leading institution for applied research in the field of visual computing. Visual computing means image and model-based IT. In simple terms, it describes the capability of transforming information into images (computer graphics) and extracting information from images (computer vision). The numerous application scenarios include human/machine interaction, interactive simulation, and modeling situations.

Our developers at the sites in Darmstadt, Rostock, Graz, and Singapore develop new technical solutions and prototypes all the way up to the market readiness stage. In collaboration with our partners, this results in application solutions that are custom-tailored to customer requirements.

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Our approaches facilitate the work with computers and are efficiently used in the industry, in everyday life, and in the healthcare sector. Our research highlights includes assisting people in the Industry 4.0, the development of key technologies for the Smart City, and the use of digital solutions in the field of Individual Health.

Through applied research, we support the strategic development of the industry and economy. Especially small and medium-sized enterprises as well as service centers can benefit from this and be successful on the market with the help of our leading technologies.

About Smart Service World II

With the technology program "Smart Service World II", Germany's Federal Ministry for Economic Affairs and Energy is spending around €50 million to fund 18 projects aiming to develop new areas of application for smart services. Its focus in part is to digitize areas of application in rural areas and small towns. The opportunities and challenges specific to these areas need to be taken on so that digital technology can be used to work toward achieving equivalent living conditions compared to urban opportunities. Additionally, accompanying research is being used to discuss issues and challenges regarding law, business models, interoperability and IT security.

More information can be found at: www.smartservicewelt.de

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