Fraunhofer
IGD

FRAUNHOFER INSTITUTE FOR COMPUTER GRAPHICS RESEARCH IGD

PRESS RELEASE

Higher agricultural yields through ground sensors and remote sensing technology

The EU project "DataBio" bundles together the expertise of European partners to assist farmers with their logistics. Fraunhofer IGD is helping manage the accumulated volumes of data. This helps not only the farms but also the authorities and insurance companies.

These days, farmers work land that stretches over hundreds of acres. To keep track of all of it, resourceful farmers are getting help from the heavens and the earth—with satellite images and ground sensors. The "DataBio" project is helping farmers build and utilize a technical infrastructure that ensures the optimal use of the accumulated spatial information.

The Fraunhofer Institute for Computer Graphics Research IGD is focusing on the interactive and fluid usability of spatial big data. The information supplied by the other project partners from remote sensing technology and ground sensors is sent to Fraunhofer IGD where researchers use a specially developed platform that stores and manages the information in a highly efficient manner, and is paired with innovative methods for analysis and surveying. With the terabytes of data accumulated, the information is best managed through a combination of proven solutions: First, the data is highly compressed for storage; second, the data is stored in the cloud where it is available when needed. This results in an advantage over the conventional visualization of image analyses, such as in static map sets: The datasets do not lose their interactivity. The results of the analysis can be reaggregated, filtered and visualized to suit individual user requirements so selectively specific problems can be solved or analyzed.

As part of a pilot project in Greece, 50,000 fields of various crops are being captured and processed by Fraunhofer IGD every 14 days. One area of application for using the new technology is in locating different plant genera in the local monocultures: Each crop has its own special soil and sun exposure needs, making interlopers a thorn in the side of farmers. Satellites are capable of taking images in infrared light, which different plants reflect differently, allowing the unwanted ones to be discovered quickly. The interactivity is not limited to

Daniela Welling | Head of Corporate Communications
Fraunhofer Institute for Computer Graphics Research IGD
Fraunhoferstrasse 5 | 64283 Darmstadt
Phone +49 6151 155-146 | presse@igd.fraunhofer.de | www.igd.fraunhofer.de

just individual areas, rather huge regions with different types of landscapes can be captured. In the pilot project, it is already possible to conduct interactive vegetation analyses over extensive parts of Greece.

The use of large, differentiated volumes of data presents new challenges not only to agriculture itself but also to the authorities and insurance companies. High-performance, interactive exploration and analysis can be used in the event of a natural catastrophe to rapidly identify high-risk areas—such as in a city—and make direct comparisons to the situation beforehand for subsequent damage assessments. With the possibility of displaying even large areas in high resolution at no cost to the interactive and analytical elements, several other applications are conceivable: Current challenges such as dieback in European forests benefit from the fastest and most accurate problem analysis possible, which are aided by visualizations in the planning process. This is because, once the cause is found, forestry experts not only need to save the trees but also take the entire biotope into consideration as well as human use. This requires an exact overview of the entire woodland—areas difficult for forestry experts to access can be directly observed through the precise visualization.

Researchers will be presenting the application at the INTERGEO trade fair from September 17 to 19, 2019 at the Fraunhofer IGD stand (Hall 01, Stand C076) and at the INTERGEO conference on September 18, 2019.

About "DataBio"

The "Data-Driven Bioeconomy" ("DataBio") project, funded as part of the European Union's "Horizon 2020" research and innovation program, focuses on presenting the benefits of big data technologies in the production of resources from agriculture, forestry and fishery/aquaculture in order to produce food, energy and biomaterials responsibly and sustainably.

More information:

"DataBio" project website: www.databio.eu

More about the Fraunhofer IGD stand and the presentations at INTERGEO 2019: https://www.igd.fraunhofer.de/en/veranstaltungen/intergeo-2019

Daniela Welling | Head of Corporate Communications
Fraunhofer Institute for Computer Graphics Research IGD
Fraunhoferstrasse 5 | 64283 Darmstadt
Phone +49 6151 155-146 | presse@igd.fraunhofer.de | www.igd.fraunhofer.de

PRESS RELEASE

More about Fraunhofer IGD's research into environmental monitoring:
https://www.igd.fraunhofer.de/en/environmental-monitoring

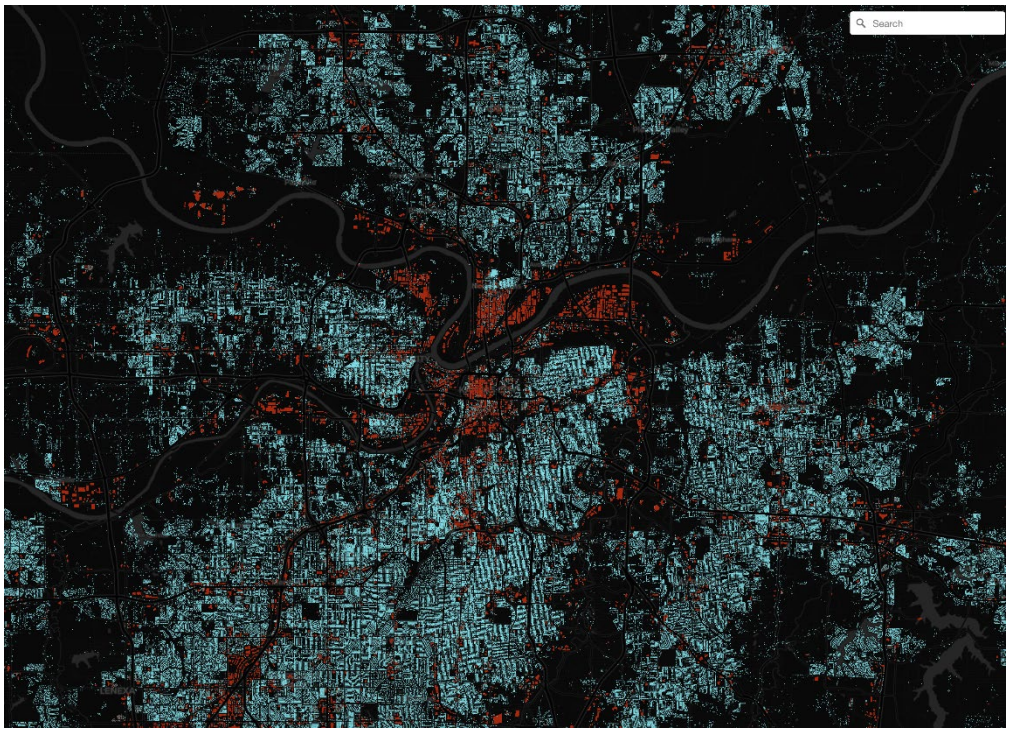

Image: Interactive visualization of Kansas City—the outlines of the buildings are extracted automatically from satellite photos (Open Data Commons)

Daniela Welling | Head of Corporate Communications
Fraunhofer Institute for Computer Graphics Research IGD
Fraunhoferstrasse 5 | 64283 Darmstadt
Phone +49 6151 155-146 | presse@igd.fraunhofer.de | www.igd.fraunhofer.de

PRESS RELEASE

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.

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.

Daniela Welling | Head of Corporate Communications
Fraunhofer Institute for Computer Graphics Research IGD
Fraunhoferstrasse 5 | 64283 Darmstadt
Phone +49 6151 155-146 | presse@igd.fraunhofer.de | www.igd.fraunhofer.de