Fraunhofer IGD

FRAUNHOFER INSTITUTE FOR COMPUTER GRAPHICS RESEARCH IGD

PRESS RELEASE

AI-supported urban and regional planning

AI and geodata systematically reveal development

Vacant lots, infill development areas and other development opportunities exist in many places but are often not systematically recorded. Fraunhofer IGD combines artificial intelligence with official geodata to automatically identify such potential and prepare it for urban, regional and state-level planning.

Fraunhofer IGD at SCCON
October 13-15

Joint Fraunhofer Stand
Hall 27, Booth 404

(Darmstadt) The need for housing, limited available land and the aim of reducing additional land sealing present municipalities and federal states with major challenges. At the same time, vacant lots, infill development areas, brownfield sites and other development opportunities often require considerable manual effort to identify. Limited staffing resources in public administrations add to the challenge.

Automated preselection supports planning

The Fraunhofer Institute for Computer Graphics Research IGD develops scalable solutions that enable development potential to be identified automatically and prepared for planning processes. Artificial intelligence can, for example, perform an initial visual identification based on aerial images or orthophotos. The results are then linked with official geodata and processed using GIS methods. This creates transparent and updatable datasets that can be integrated into existing GIS and planning systems.

"Many cities already have extensive geodata resources whose potential has so far only been partially utilized," says Dr. Eva Klien, Head of the Division Infrastructure and Public Services at Fraunhofer IGD. "Our solution shows how these data can be analyzed automatically to reveal housing potential within existing urban areas and efficiently support planning processes."

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PRESS RELEASE

From vacant lots to vertical extension potential

In inner urban development, AI models can, for example, analyze aerial images and identify open spaces within individual properties. In addition, 3D laser scan data can be used to compare building heights with the surrounding development and identify possible potential for adding additional storeys. The results can be provided as map layers, datasets or 3D visualizations for further expert assessment.

The methods are not limited to individual municipalities. For a state-wide development potential register in Saxony-Anhalt, Fraunhofer IGD developed a scalable AI pipeline that analyzes digital orthophotos and combines the results with ALKIS, ATKIS and spatial planning data. This creates a standardized and reproducible data basis for identifying development potential

AI provides support – professional decisions remain with people

Automated analysis does not replace case-by-case professional or legal assessment. Building and planning regulations, ownership structures, political prioritization and structural assessments remain the responsibility of the relevant authorities. AI provides a qualified preselection and helps filter relevant areas from large datasets.

Fraunhofer IGD will present the topic at the Smart Country Convention in Berlin. Visitors can find the institute in Hall 27, Booth 404.

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Further information:

[Systematically Capture and Utilize Housing Potential - Fraunhofer IGD]

[Intelligent Development Potential Analysis for Saxony-Anhalt - Fraunhofer IGD]

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Result of the infill site analysis: The image shows the proportion of undeveloped area for each property, determined by analyzing aerial imagery and geospatial data. The lighter the color, ranging from purple through blue and green to orange, the higher the proportion of undeveloped area.
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About Fraunhofer IGD

The Fraunhofer Institute for Computer Graphics Research IGD has been setting standards in visual computing – image- and model-based informatics – for more than 30 years. Its roughly 260-strong staff support companies and institutions across manufacturing and mobility, healthcare, bioeconomy, infrastructure and public services, and maritime economy sectors. Fraunhofer IGD provides specific technological solutions and support for strategic development. Its researchers carry out problem analyses, design hardware and software, develop protypes, and implement interactive visual systems. The focuses are human-machine interactions, virtual and augmented reality, artificial intelligence, interactive simulation, modeling, and 3D printing and scanning. Fraunhofer IGD has been engaged in high-level research since 1987, supporting change in society and the economy with application-oriented solutions developed at its facilities in Darmstadt and Rostock.

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