PRESS RELEASE

Project start "Pic2Bridge"

AI-optimized bridge planning and maintenance

As part of the Pic2Bridge research project, Fraunhofer IPM is working with the Institute of Concrete Structures at TU Dresden and fokus GmbH Leipzig to optimize the bridge planning and maintenance process. This is to be achieved with the help of an automated AI process that can create a 3D bridge model from just a few photos. The project work starts on November 12, 2024 with a virtual kick-off event.

Almost all existing infrastructure structures such as bridges or dams were planned and built at a time when digital planning tools did not yet exist. As a result, most planning data is available as analog 2D plans – often still hand-drawn. Maintenance can only be managed very laboriously and inefficiently based on such analog data. Digital 3D models of the buildings would be helpful.

But how can such 3D models be created for existing buildings at a reasonable cost? The Pic2Bridge consortium is investigating this question using the example of bridges: Together with the Institute of Concrete Structures at TU Dresden and fokus GmbH Leipzig, Fraunhofer IPM is investigating how a bridge can be digitally reconstructed on the computer using just a few images, making maintenance easier, more efficient, and ultimately more cost-effective. In view of the large number of existing structures, measuring each individual structure would be far too time-consuming. In addition, many structures are not freely accessible.

To generate the required 3D models, the research team relies on Structure from motion (SfM) technology and new data sources such as the Mobilithek, the Deutsche Fotothek and Structurae. Systematic data collection and AI-driven methods are also intended to improve the design process for new buildings: The aim is to achieve more objective and higher quality bridge designs. In the long term, this should revolutionize the planning and maintenance of bridge structures. Existing bridges often vary greatly in quality. Especially older structural designs are heavily based on the individual experience of the respective engineers.

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Project partners
Institute of Concrete Structures (TU Dresden), Fraunhofer IPM (Freiburg), fokus GmbH (Leipzig)

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