

Methods to Semi-Automatically Generate 3D Bridge Models from 2D PDF Drawings

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Categories:

- Civil Engineering

Keywords:

- Automation
- BIM for Infrastructure
- Bridge Construction
- Bridge Information Modelling (BrIM)
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- Civil Engineering
- Industry Foundation Classes (IFC)
- Infrastructure Modeling

Researchers at Purdue University have developed software systems and methods for creating 3D models of bridges from uploaded 2D PDF drawings. Currently, Building Information Modeling (BIM) is completed manually on CAD software. Manual CAD bridge modeling is time-intensive; modeling one bridge takes approximately 5 hours for an experienced bridge engineer. The Purdue technology is much less time-intensive. In testing of six bridges from the initial step of uploading the 2D PDF to receiving a completed 3D CAD model, the method required an average of 10 minutes, 43 seconds. This software can help engineers quickly create 3D renderings of new bridges or create a maintenance schedule for existing bridges.

Recent Publication:

"Framework for Developing IFC-Based 3D Documentation from 2D Bridge Drawings."
American Society of Civil Engineers Journal of Computing in Civil Engineering
DOI: 10.1061/(ASCE)CP.1943-5487.0000986

Technology Validation: The Purdue technology is much less time-intensive than manual modelling of bridges. In testing of six bridges from the initial step of uploading the 2D PDF to receiving a completed 3D CAD model, the method required an average of 10 minutes and 43 seconds. This is 3.33% of the time typically required to model bridges.

Advantages:

Semi-automatic
Provides accurate 3D renderings
Fast

Converts the 3D models into industry foundation classes (IFC) files

Applications:

Creating 3D models of bridges

People:

- Zhang, Jiansong (Project leader)
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Intellectual Property:

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