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Automated BIM Object Classification

This automated object classification system leverages machine learning to automatically categorize BIM components, significantly reducing manual labeling effort and streamlining project management in construction.

Researchers at Purdue University have developed an automated object classification system for building information modeling (BIM) applications. BIM is used to visualize building components and systems in the design phase of construction. This technology helps engineers, architects, and project managers by automatically classifying components into predefined categories to reduce labeling efforts. This can result in significant time savings, as opposed to alternative BIM methods in which components must be manually labeled. This is a step towards the full automation of architecture, engineering, and construction (AEC) and enables insights to be gathered both for project management and engineering purposes. This technology offers benefits to organizations looking to take a data driven approach to construction by leveraging machine learning to automate parts of the workflow and ensure seamless software interoperability, which is known to be labor intensive and error-prone.

Advantages

-Reduces labeling efforts for engineers and architects

-99.6% automated classification precision and accuracy

-Streamlined engineering and project management

Applications

-Machine Learning / AI

-Architecture, engineering, and construction

-Building information management

Technology Validation:

Technology ID

2022-ZHAN-69896

Category

Artificial Intelligence & Machine Learning/Computer Vision & Image Recognition

Robotics & Automation/Simulation, Digital Twins, & Industrial Automation

Buildings, Infrastructure, & Construction/Infrastructure Modeling & Digital Twins

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This technology has been validated by testing the object classification system on real world BIM data, where it was shown to have a 99.6% F1 score, indicating high precision and accuracy.

TRL: 4

Intellectual Property:

Provisional-Gov. Funding, 2023-03-20, United States

Keywords: automated object classification, building information modeling, BIM, architecture engineering and construction, AEC, machine learning in construction, AI in construction, project management software, engineering technology, data-driven construction, architecture, Artificial Intelligence, building, Civil Engineering, classification, Computer Technology, Construction, Data, Engineering, information, Machine Learning, project management