

AI, robots, data software helping create new approach for planning cities of the future

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Automated Code Compliance

- Information extraction automation
- Deep natural language processing
- Automated logic-based reasoning
- Building info modeling (BIM) extension automation

Construction Operation Automation

BIM Interoperability Improvement

- Cartesian-point level geometric analysis
- Game-like visualization
- Advanced BIM analysis tool development
- Integration with game simulation and VR
- Safety training and education
- nD simulation

Constructability Analysis

Immersive & Interactive Design Review

Text & Image Analysis

PURDUE POLYTECHNIC AutoIC Lab, Purdue University

Purdue’s AutoIC Lab develops and leverages advanced technologies to support construction engineering and management, construction automation, and sustainable infrastructure, including building information modeling (BIM).
Credit: Purdue University

Artificial intelligence and robots are playing significant roles as planners develop the cities of the future. The architecture, engineering and construction (AEC) industry is facing a major shift in balancing the massive amounts of data available through advanced technologies.

The system they use, called building information modeling (BIM), takes all the [data points](#) and information to develop plans at all stages of [construction](#)—from planning to maintenance to demolition. Purdue University researchers have come up with a novel way to approach the data, simplify the BIM software and help in creating future city layouts.

The Purdue team created a new method for better understanding and using industry foundation classes (IFC), which is the term given to the data used to create the BIM software.

"It normally requires a large amount of effort when manually interpreting IFC data due to its large number of entities and the complex connections between one entity and another," said Jiansong Zhang, an assistant professor in Purdue's Polytechnic Institute, who leads the research team. "Our technology helps BIM software developers create IFC-based solutions for any task in the life cycle of an AEC project."

Zhang said the new technology allows for full software development based on IFC data.

"We created a visualization algorithm and implemented it based on the new method we developed," said Zhang, who also leads Purdue's Automation and Intelligent Construction Lab. "The new method can help eliminate missing or inconsistent information during software development."

The data covers all sectors, functions and life cycle phases of [software](#) development for construction projects.

Provided by Purdue University

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