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## Software Lab:

# Scene2Compliance – Automated Compliance Verification from BIM Generated Views

### Description

Ensuring regulatory compliance in architecture, engineering, and construction (AEC) projects remains a complex and labor-intensive process. While Building Information Modeling (BIM) has significantly enhanced the digital representation of built environments, compliance verification still relies heavily on manual checks and predefined rule-based systems. Most existing research has focused on static rule-based compliance assessments, often neglecting the dynamic and context-specific compliance challenges in mixed-use and large-scale facilities. *Scene2Compliance* aims to develop an end-to-end framework that leverages BIM-generated views to automatically extract applicable regulatory rules and assess compliance based on scene-specific attributes. The system will analyze architectural and structural elements such as walls, doors, windows, mechanical components, accessibility features, and fire safety elements. By integrating multimodal LLM-based retrieval augmented generation techniques and autonomous checking, *Scene2Compliance* will provide automated compliance verification for building codes, safety regulations, and accessibility guidelines, reducing human intervention and enhancing regulatory adherence.

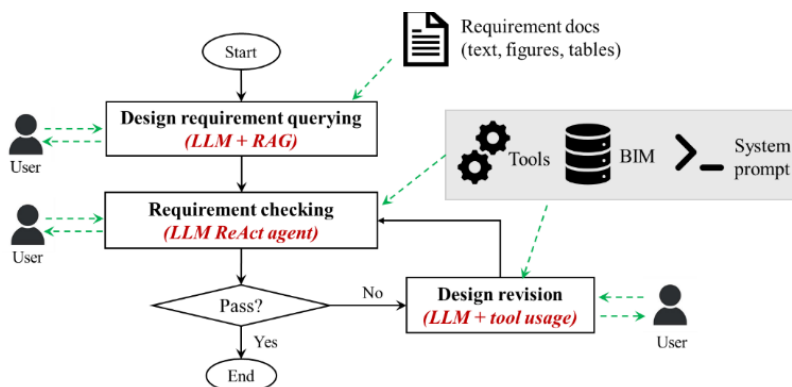


Figure 1. A similar workflow [1] but our input should be scene from BIM

### Task

To develop a framework that performs compliance checking with a scene from BIM and retrieved relevant regulations

- Perform a literature review to identify state-of-the-art methods and baseline approaches that address similar tasks
- Select and collect target datasets for specific design regulations.
- Creating a dataset that consists of scene/regulation/compliance results.
- Implement algorithms that perform the similar task described in Figure 1 but replace user input modality.

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## References

- [1] Ying, H., and R. Sacks. 2024. "From Automatic to Autonomous: A Large Language Model- driven Approach for Generic Building Compliance Checking.", EasyChair Preprint.