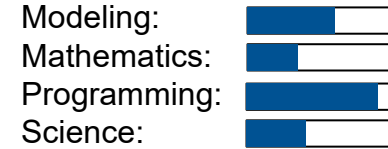
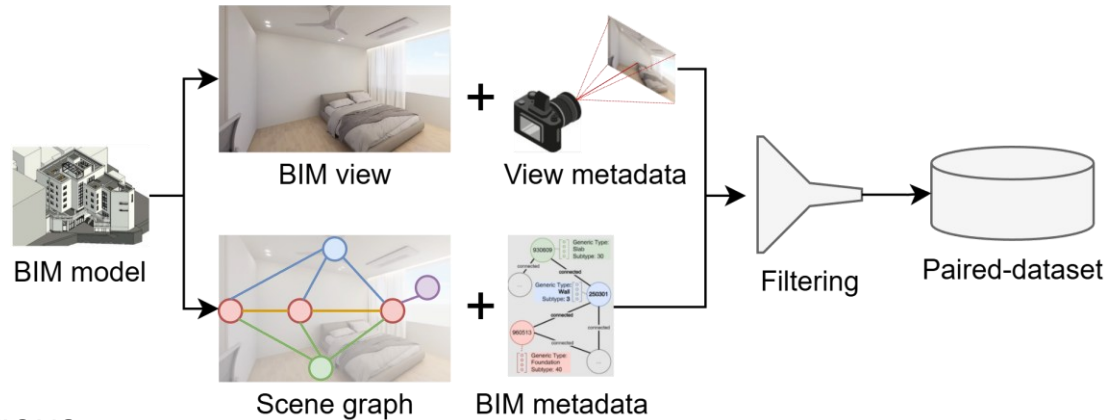


## Project Characteristics



# BIM2SceneGraph

**Task:** This project aims to develop an automated data generation system for constructing paired scene images and scene graphs from IFC-based BIM models.



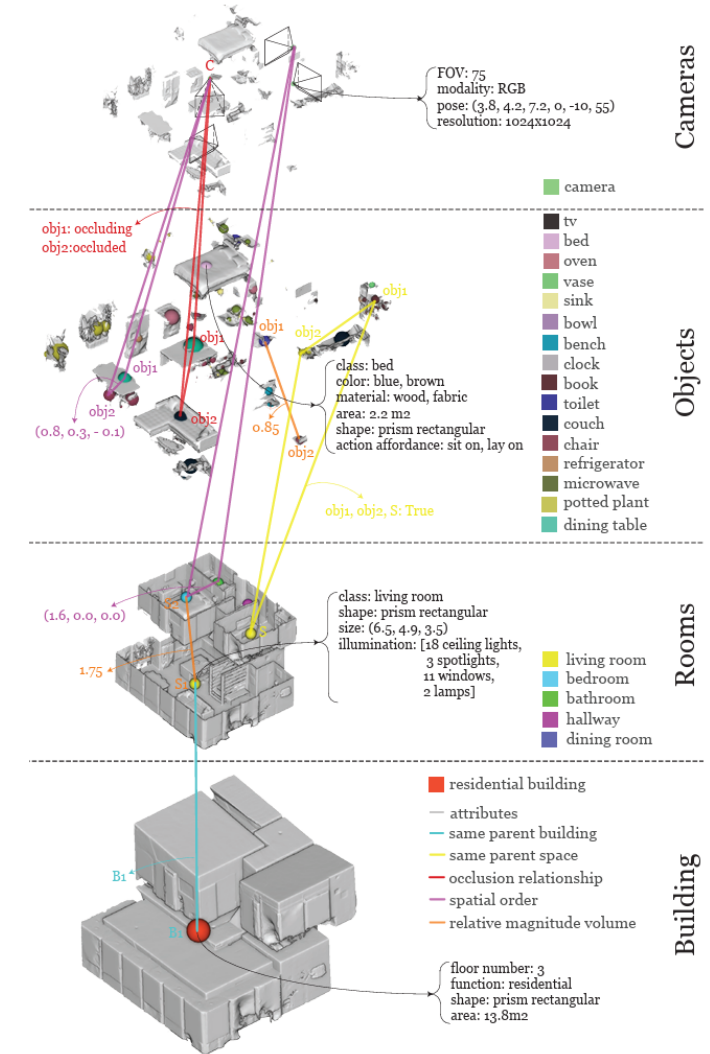
### GENERAL INSTRUCTIONS:

- **IFC-BASED SCENE GRAPH CONSTRUCTION:** Construct multi-granularity scene graphs from IFC BIM models with stable identifiers and extensible schemas.
- **VIEW GENERATION AND VISIBILITY-AWARE LABELING:** Generate camera views inside BIM environments and link them with actually visible scene graph nodes.
- **DATASET ASSEMBLY, SAMPLING, AND QUALITY CONTROL:** Assemble image–scene graph pairs into a reusable dataset with defined sampling rules and quality checks.
- **USER INTERFACE AND DATA GENERATION CONTROL:** Provide a unified interface to configure, control, and monitor the entire data generation workflow.

[1] Armeni, I., He, Z. Y., Gwak, J., Zamir, A. R., Fischer, M., Malik, J., & Savarese, S. (2019). 3d scene graph: A structure for unified semantics, 3d space, and camera. In Proceedings of the IEEE/CVF international conference on computer vision (pp. 5664-5673).

[2] Ying, H., Sacks, R., & Degani, A. (2023). Synthetic image data generation using BIM and computer graphics for building scene understanding. Automation in Construction, 154, 105016.

[3] Wang, Z., & Sacks, R. (2025). Building Information Graphs (BIGs): remodeling building information for learning and applications. Data-Centric Engineering, 6, e44.



3D Scene Graph (Armeni et al., 2019)