

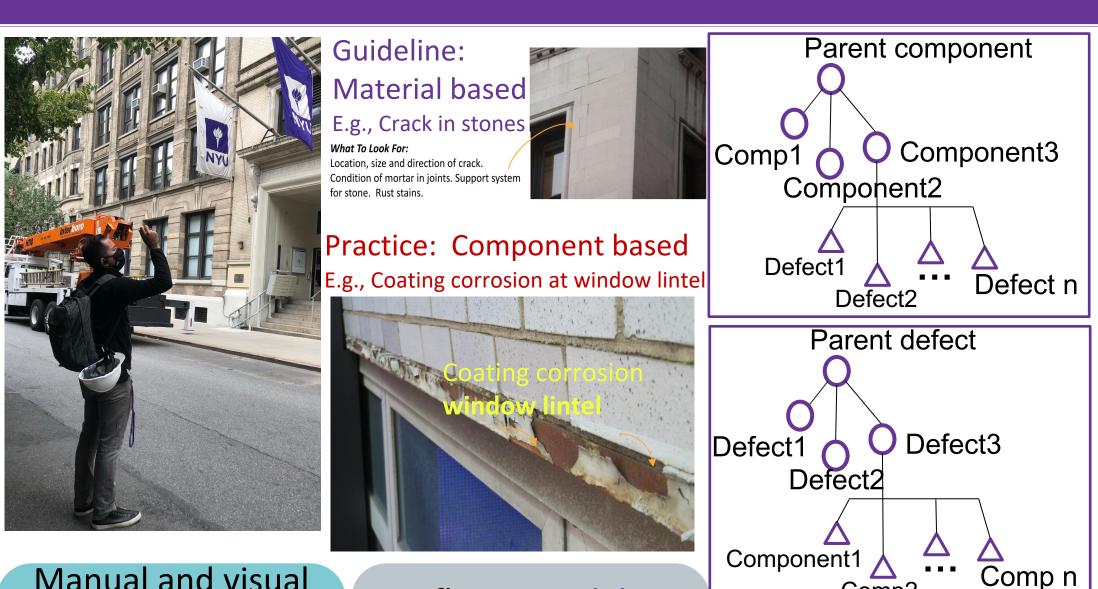
A BIM-based approach for improving building façade inspection in cities



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Challenges in façade inspection



Manual and visual inspection: Inconsistent inspection and wide range of omissions

Conflict in guidelines vs. practice Material-based vs. Component-based

Component1 Comp2 Inspectors group and visualize findings in

different ways

Expected Contributions

- Hierarchy of building façade components
- Taxonomy of defects
- Algorithm that reasons with BIMs to generate customized façade inspection checklists
- An algorithm that leverages information visualization taxonomy to group and visualize inspection data (per preference)

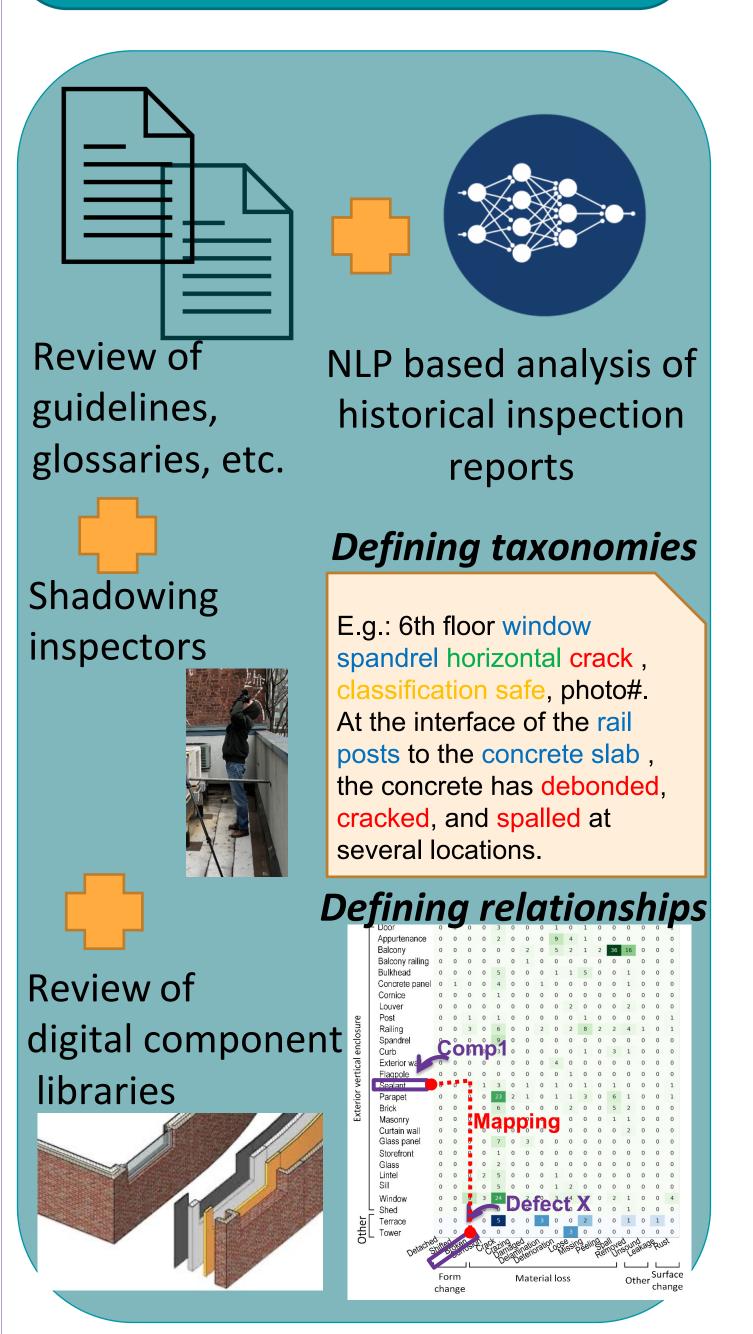
Publications

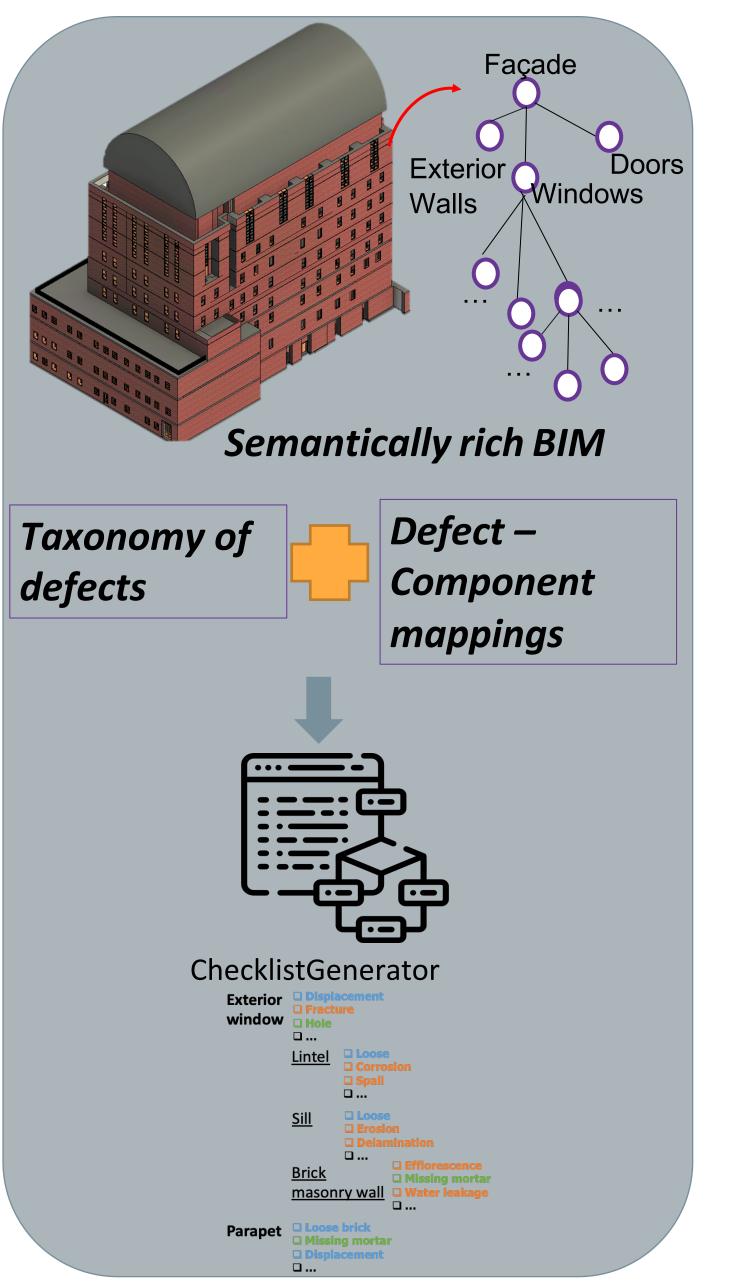
- Shi, Z. and Ergan, S (2021). An ontology towards BIM-based guidance of building façade maintenance. Proceedings of the 38th ISARC, November 2-3, Dubai, UAE.
- Shi, Z., Park, K., Ergan, S (2020). Towards a comprehensive façade inspection process: An NLP-based analysis of historical façade inspection reports for knowledge discovery. Proceedings of the 37th ISARC, October 27-28, Kitakyushu, Japan.
- Shi, Z., Ergan, S. (2020). Towards Point Cloud and Model-Based Urban Façade Inspection: Challenges in the Urban Façade Inspection Process. In Construction Research Congress 2020: Safety, Workforce, and Education (pp. 385-394). Reston, VA: American Society of Civil Engineers.
- Shi, Z., Ergan, S. (2018). Leveraging point cloud data for detecting building façade deteriorations caused by neighboring construction. Tamap Journal of Engineering, 2018.0

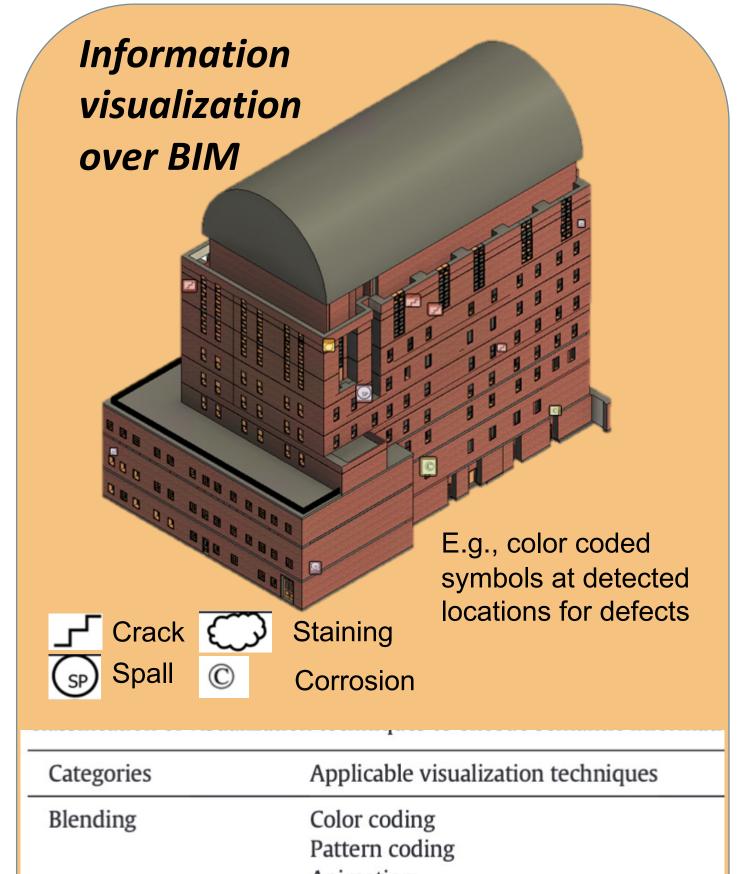
A model-based generation of comprehensive checklists and flexible visualization of inspection findings

Identify characteristics of façade inspection information requirements

Generate a customized checklist based on the BIM of a target building Enable flexible data regrouping and visualization of inspection findings







Animation **Embedding** Symbol/metaphor Text overlay/annotation Chart overlay Multi-viewing N/A

Classification of visualization techniques

Ref: Yang, X., & Ergan, S. (2014). Evaluation of visualization techniques for use by facility operators during monitoring tasks. Automation in Construction, 44, 103-118.