

Report, Kinetic project

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1 Objectives

the objective of the project is to process files in IFC format containing building meshes that are not hermetic in an algorithms repairing geometric error in a kinetic data structures

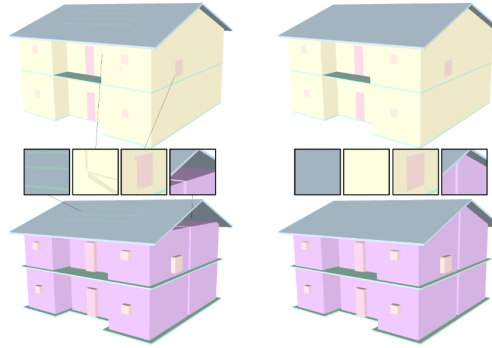
2 Tools

2.1 CGAL

CGAL is a package for geometry algorithms, offering different data structures and algorithms to work on polygons, surface, mesh generation...

2.2 Kinetic

Kinetic algorithms is a package from CGAL, he permit to work on mesh with some hole in it . When applied on the mesh the Kinetic algorithms will 'prolonger' some surface to fill the mesh to make it waterproof. we can see here what



the algorithm is capable of :

References

- [1] Jean-Philippe Bauchet and Florent Lafarge. Kinetic Shape Reconstruction. *ACM Transactions on Graphics*, 2020.
- [2] The CGAL Project. *CGAL User and Reference Manual*. CGAL Editorial Board, 5.6.1 edition, 2024.
- [3] Mulin Yu, Florent Lafarge, Sven Oesau, and Bruno Hilaire. Repairing geometric errors in 3D urban models with kinetic data structures. *ISPRS Journal of Photogrammetry and Remote Sensing*, 192, October 2022.