

Applications of 3D modelling of the built environment

Lesson 7.1

There is no formal handout for this lesson, but we would like to list a few resources that you can use to have an overview of the many different applications of 3D modelling of the built environment. First of all, the following paper has comprehensive lists of applications (up to 2015):

1.1 MSc geomatics theses 1

To read or to watch.

F. Biljecki et al. (2015). Applications of 3D City Models: State of the Art Review. *ISPRS International Journal of Geo-Information* 4.4, pp. 2842–2889

Paper: <https://doi.org/10.3390/ijgi4042842>

1.1 MSc geomatics theses

Then, we would like to highlight some of the most interesting applications that have been created by previous geomatics students. These are all good MSc theses that build on the topics we have seen throughout the course.

For some of them, there's a paper, so preferably skim that when available. For the rest, please read the summary of the thesis.

1.1.1 Automatic conversion of CityGML to IFC (Nebras Salheb, 2019)

To read or to watch.

Full MSc thesis: <http://resolver.tudelft.nl/uuid:455b6060-5152-46eb-8c64-5382f915442b>

1.1.2 Automatic enhancement of CityGML LoD2 models with interiors and its usability for net internal area determination (Roeland Boeters, 2013)


To read or to watch.

R. Boeters et al. (Dec. 2015). Automatically enhancing CityGML LOD2 models with a corresponding indoor geometry. *International Journal of Geographical Information Science* 29.12. ISSN: 1365–8816 (Print), 1362–3087 (Online), pp. 2248–2268

Paper: https://3d.bk.tudelft.nl/ken/files/15_ijgis_roeland.pdf

Full MSc thesis: <http://resolver.tudelft.nl/uuid:b22a2b93-4a0a-4aa7-8e3b-6e08e0027634>

1.1.3 Automatic extraction of an IndoorGML navigation from an indoor point cloud (Puck Flikweert, 2019)


 To read or to watch.

P. Flikweert et al. (2019). Automatic extraction of a navigation graph intended for IndoorGML from an indoor point cloud. *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences IV-2/W5*, pp. 271–278

Paper: <https://doi.org/10.5194/isprs-annals-IV-2-W5-271-2019>

Full MSc thesis: <http://resolver.tudelft.nl/uuid:b11f5b57-5362-4b45-bed6-d5bc154d86aa>

1.1.4 Automatic identification of water courses from AHN3 in flat and engineered landscapes (Tom Broersen, 2016)


 To read or to watch.

T. Broersen et al. (2017). Automatic identification of watercourses in flat and engineered landscapes by computing the skeleton of a LiDAR point cloud. *Computers & Geosciences* 106, pp. 171–180

Paper: <https://3d.bk.tudelft.nl/rypeters/pdfs/Broersen17.pdf>


Full MSc thesis: <http://resolver.tudelft.nl/uuid:7a64a9f7-2fef-46b1-9e48-5e0b0d736056>

1.1.5 Automatic repair of 3D city building models using a voxel-based repair method (Damien Mulder, 2015)

 To read or to watch.

Full MSc thesis: <http://resolver.tudelft.nl/uuid:8ef4459d-b940-4007-bc3c-d87349015129/>


1.1.6 Improving location accuracy of a crowdsourced weather station by using a point cloud: use case base Netatmo on the Hague (Yixin Xu, 2019)

 To read or to watch.

Full MSc thesis: <http://resolver.tudelft.nl/uuid:b9cd47d6-c>


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1.1.7 Large-scale efficient extraction of 3D roof segments from aerial stereo imagery (Martijn Vermeer, 2018)

 To read or to watch.

Full MSc thesis: <http://resolver.tudelft.nl/uuid:24e59c42-b019-4fd8-a968-307eae8e4460>

1.1.8 Structure-aware building mesh simplification (Vasileios Bouzas, 2019)

 To read or to watch.

Full MSc thesis: <http://resolver.tudelft.nl/uuid:a0faf1a6-9815-4828-9186-a4a16119c71c>

Bibliography

- Biljecki, F., J. Stoter, H. Ledoux, S. Zlatanova, and A. Çöltekin (2015). Applications of 3D City Models: State of the Art Review. *ISPRS International Journal of Geo-Information* 4.4, pp. 2842–2889.
- Boeters, R., K. Arroyo Ohori, F. Biljecki, and S. Zlatanova (Dec. 2015). Automatically enhancing CityGML LOD2 models with a corresponding indoor geometry. *International Journal of Geographical Information Science* 29.12. ISSN: 1365–8816 (Print), 1362–3087 (Online), pp. 2248–2268.
- Broersen, T., R. Peters, and H. Ledoux (2017). Automatic identification of watercourses in flat and engineered landscapes by computing the skeleton of a LiDAR point cloud. *Computers & Geosciences* 106, pp. 171–180.
- Flikweert, P., R. Peters, L. Díaz-Vilariño, R. Voûte, and B. Staats (2019). Automatic extraction of a navigation graph intended for IndoorGML from an indoor point cloud. *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences* IV-2/W5, pp. 271–278.