

Applications of 3D modelling of the built environment

Lesson 7.2*

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To finish the course, we would like you to have an overview of the many different applications of 3D modelling of the built environment. For this, please read the following paper:

 **To read or watch**

Biljecki F, Stoter J, Ledoux H, Zlatanova S, and Çöltekin A (2015). Applications of 3D city models: State of the art review. *ISPRS International Journal of Geo-Information*, 4(4):2842–2889

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

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

To read or watch

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

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

To read or watch

Boeters R, Arroyo Ohori K, Biljecki F, and Zlatanova S (2015). Automatically enhancing CityGML LOD2 models with a corresponding indoor geometry. *International Journal of Geographical Information Science*, 29(12):2248–2268. doi: <http://dx.doi.org/10.1080/13658816.2015.1072201>. ISSN: 1365–8816 (Print), 1362–3087 (Online)

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>

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

To read or watch

Flikweert P, Peters R, Díaz-Vilariño L, Voûte R, and Staats B (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/W5:271–278

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>

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

To read or watch

Broersen T, Peters R, and Ledoux H (2017). Automatic identification of watercourses in flat and engineered landscapes by computing the skeleton of a lidar point cloud. *Computers & Geosciences*,

106:171–180

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

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

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

 To read or watch

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

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 watch

Full MSc thesis: <http://resolver.tudelft.nl/uuid:b9cd47d6-c54f-40f4-95f9-4e9624f1c859>

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

 To read or watch

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

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

 To read or watch

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

References & further reading

Biljecki F, Stoter J, Ledoux H, Zlatanova S, and Çöltekin A (2015). Applications of 3D city models: State of the art review. *ISPRS International Journal of Geo-Information*, 4(4):2842–2889.

Boeters R, Arroyo Ogori K, Biljecki F, and Zlatanova S (2015). Automatically enhancing CityGML LOD2 models with a corresponding indoor geometry. *International Journal of Geographical Information Science*, 29(12):2248–2268. doi: <http://dx.doi.org/10.1080/13658816.2015.1072201>. ISSN: 1365–8816 (Print), 1362–3087 (Online).

Broersen T, Peters R, and Ledoux H (2017). Automatic identification of watercourses in flat and engineered landscapes by computing the skeleton of a lidar point cloud. *Computers & Geosciences*, 106:171–180.

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