Master of Science Project

Building Engineering

Theme: Structural Design & Safety

Predicting structural disasters: the Heerlen shopping mall disaster

Summary

In the last years there have been a few major collapses in The Dutch building industry. The most recent one is the collapse of shopping mall 't Loon, Heerlen.

Government and industry started lots of initiatives to come with solutions for a safer building industry. It would be beneficial if structural failures could be avoided, or at least be predicted.

In the meantime new satellite technology proved that it is possible to detect structural deformation of buildings with millimeter level and with weekly updates. TU Delft has shown that for the Heerlen case deformation could already be detected more than 8 years before the collapse.

The main goal of this MSc thesis study is to investigate if it is possible to predict structural failures by monitoring historical (space)geodetic data.

In the Heerlen case study it needs to be investigated whether the moment of structural damage can be predicted, and whether 'warning flags' could be used.

The study is of high importance, as the satellite technology is in principle able to perform the structural monitoring for all larger constructions in the Netherlands

Objective

Investigating the opportunities of using remote sensing data to predict structural failures

Students profile

We are looking for a Building Engineering student with apparent interest in structural analysis.

Structural safety has attracted the attention of professionals and press in The Dutch Building industry. The outcomes of this research are very relevant and publication in a journal will be encouraged.
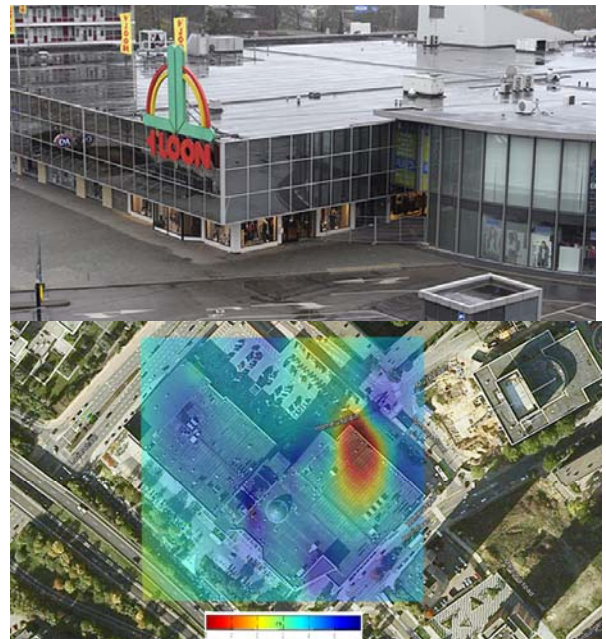
Photo: Shopping mall 't Loon, Heerlen, and the satellite data showing deformation 8 years prior to the collapse

Obligatory committee members:
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For students of Building Engineering

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