Chair of Computing in Civil and Building Engineering
TUM School of Engineering and Design
Technical University of Munich

Master Thesis Proposal

Change Detection Between Two Plan Indices: Automated Identification of Modifications in Construction Drawings

Background

In the construction industry, drawings and plans undergo frequent revisions throughout project lifecycles. While designers are required to mark their modifications on updated drawings, this manual process is often incomplete or inconsistent. Missing or incorrectly marked changes can lead to costly oversights and coordination issues during construction phases.

This thesis aims to develop an automated system that can verify whether all changes between drawing versions have been properly marked, identify unmarked modifications, and generate natural language summaries of detected changes.

This master thesis will be conducted in cooperation with Innovation Management Bau (IMB) and co-supervised by an IMB employee. IMB may provide construction drawings for testing and validation purposes.

Objectives

The student shall investigate and develop automated methods for detecting and describing changes between versions of construction drawings. The system should verify completeness of designer markings, identify missed changes, and provide clear change summaries.

The work should encompass both theoretical analysis of existing approaches and practical implementation of a working solution, including evaluation against commercial tools such as BlueBeam.

Expected Outcomes

- **Scientific master thesis** with comprehensive analysis of existing methods and technologies
- **Working prototype** demonstrating automated change detection and verification capabilities
- **Evaluation study** comparing the developed solution against existing commercial tools

Prerequisites

- **Programming skills** in Python or similar languages
- **Basic understanding of construction drawings** (desirable)
- **Proficiency in German or English** (thesis can be written in either language)