Literature Study: Visual Analysis for Multi-Modal Data

Motivation

In domains like medicine and industrial inspection, imaging methods have been developed for inspecting objects non-destructively, for example PET, MR and CT. Each modality has its distinct advantages and disadvantages, for example MRI can resolve soft tissue very well, while CT is good in resolving bone structures. Therefore, techniques have been developed for a meaningful combined visualization of multiple imaging modalities. Your task will be to provide an overview over the state-of-the-art in visual analysis techniques for multi-modal data.

Goal

Create a state-of-the-art-report answering the following questions:
- Which frameworks are currently addressing the visualization of multiple modalities?
- Which specific tasks are these frameworks trying to solve?
- In which ways are they using image processing techniques like registration, fusion or segmentation to support these tasks?
- How and with which techniques (interaction, visualization) do they support the analysis of multimodal data?
- How do they address the problem of clutter and occlusions in volumetric multi-modal datasets?

The structure of this report might look like this:
- List state-of-the-art frameworks.
- Describe used techniques and what tasks they solve.
- Analyze the limitations and problems of each framework.
- Compare the frameworks and derive conclusions in respect to common challenges in multi-modal data visualization.

Keywords: multi-modal imaging, multiple dataset visualization, visual analysis, interaction techniques, data fusion, comparative visualization

Starting literature

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