

Usability Evaluation and Improvements for the Open Source Software open_iA

Motivation

The open_iA software [1] enables users to perform general visual analysis tasks and some processing on volumetric datasets. In addition, it provides visual analytics tools for some specific analysis tasks on industrial computed tomography datasets, such as the analysis of a series of scans of a specimen exposed to worsening damage, or the analysis of fibers, pores, and fiber-bundles in fiber-reinforced polymers. While it has shown promising results in previous research works, one hindrance for a more widespread usage is a user interface with a steep learning curve. Since it has been developed mainly as a basis for research prototypes, the user interface was not developed with usability as first concern.

Goal

Your task is to evaluate the usability of open_iA [1]. This will start by initial own pilot experiments, which should lead to a plan as to which areas of the software are most in need of improvements, followed by a plan of further evaluations to carry out, e.g. through user studies. With the results of these evaluations, you will develop concepts for improving the usability in the investigated areas and create mockups and drafts of how an improved version of open_iA should look like. Depending on available time and interest, these improvements can subsequently be implemented directly in the course of the thesis, or at a minimum, be documented in detail in the final report, along with a detailed description of the performed evaluation and its outcome.

Starting literature

1. B. Fröhler, J. Weissenböck, M. Schiwarth, J. Kastner, C. Heinzl, open_iA: A tool for processing and visual analysis of industrial computed tomography datasets, Journal of Open Source Software, 4 (35), 1185, 2019, doi: [10.21105/joss.01185](https://doi.org/10.21105/joss.01185).
2. J. Nielsen, Usability Engineering, Academic Press, London, 1993, doi: [10.1016/C2009-0-21512-1](https://doi.org/10.1016/C2009-0-21512-1).
3. H. Rex Hartson, Terence S. Andre & Robert C. Williges (2001) Criteria For Evaluating Usability Evaluation Methods, International Journal of Human-Computer Interaction, 13:4, 373-410, doi: [10.1207/S15327590IJHC1304_03](https://doi.org/10.1207/S15327590IJHC1304_03).

Kontakt

Patrick Weinberger (patrick.weinberger@fh-wels.at)