CVAT for Medical Imaging

Project Management and Software Development
for Medical Applications

General Info

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Project Abstract

CVAT is an open-source image annotation tool offering rich features for efficient images labelling. It is designed for natural imaging annotations, while labeling medical imaging with CVAT is much more limiting. In this project we will aim to improve the overall experience in medical imaging annotation.

Background and Motivation

CVAT (https://github.com/openvinotoolkit/cvat) is a popular open-source image annotation tool offering rich features for efficient images labelling. The generated labels can be later used for the algorithms design and validation. CVAT is commonly used for natural image and video annotation and numerous resources are available on the web to illustrate its rich capabilities. While medical images can also be annotated using CVAT, there are a few flaws making overall user experience quite limited. In this project, we will work on the enhancement of the CVAT features, aiming for a better user experience while annotating medical imaging with CVAT. Some features have been already implemented in the past work, so we will aim at further improvement and robustness of the proposed experience.

Student's Tasks Description

In this project we will focus on activity tracking within the labelling process. That is, we will seek to track the changes (creation, update, deletion) performed by each user. We aim to build a logging database that will be synchronized with the CVAT database and contain the information of the actions performed by each user.

- Tracking the activity will be our primary goal

- Displaying the information from the logging database in the CVAT User Interface will be our secondary goal.

Working on these tasks will allow to explore the world of full stack development, with both, front-end and back-end aspects. This work offers an opportunity to improve development skills working on publicly available community code and writing some own code as well.

Technical Prerequisites

Full-stack software engineering:

- frontend: Javascript (required), React (optional), Webpack (optional), HTML (required), CSS (required)

- Infrastructure: Docker (strongly desirable)

- backend: Javascript or Python,

- database: Mongodb or Postgresql (desirable)

References

- Official CVAT github repository https://github.com/openvinotoolkit/cvat
- CVAT fork https://github.com/phknestel/cvat-PDMS

Please send the completed proposal to ardit.ramadani@tum.de, lennart.bastian@tum.de and tianyu.song@tum.de. Please note that this proposal will be evaluated by the BMC coordinators and will be assigned to a student only in case of acceptance.