

Assessment of the bachelor thesis by Leonid Tulin

Online Calibration of Cameras on Cars

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The goal of the thesis was to investigate the quality of camera calibration in COLMAP structure from motion and camera calibration system, to evaluate COLMAP camera models on Oxford Robot Car Data, and to select the subset of

The first part of the thesis briefly reviews the COLMAP structure from motion system and the camera models implemented there and tested in the thesis. The review is reasonably correct but still lacks the level of detail and the breadth needed to serve as a good summary and replacement for the COLMAP documentation. Still, it shows that Leonid Tulin was able to grasp the technology on sufficient level to build on it.

The main contribution of the thesis is in the experimental analysis of the stability of online camera calibration base on structure from motion. It has been demonstrated how much internal parameters vary over different image sequences and camera models. This is a useful engineering result allowing to understand limits of such a calibration technique.

On the positive side, I have to value that Leonid Tulin was able to grasp the topic and carry out the experiments on non-trivial real data. On the negative side, I have to admit that the language of the thesis still needs major improvements as well as that the clarity of writing does not really reach the level of a fully professional thesis. Also, we did not really have chance to look at how (and if it is possible) to select only subsets of data to reach more stable results.

Leonid Tulin had somewhat cold start and it took us some time to reach efficient collaboration. As time went, he become more and more efficient, but he still has to work hard to match best students at his level of studies. We did not progress as fast as I would expect and hence he addressed the last goal of the thesis only partially. Nevertheless, I am happy to have only part of the assignment done reasonably well than to have done all but with questionable results.

To conclude, Leonid Tulin presented a useful engineering work and to large extent fulfilled the goals set in the assignment. His work is not excellent but good. Therefore, I recommend grading the thesis by the *good grade C*.

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