Assessment of the master thesis by Jan Krček

Multi-Body Structure from Motion

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thesis supervisor

The goal of the thesis was to (i) analyze the algorithm for Multi-Body Structure from Motion (M-B SfM) previously developed by Filip Šrajer as a part of the YASFM structure from motion software, (ii) identify its weaknesses, and (iii) suggest, implement and demonstrate an improvement to the previous approach. M-B SfM is an important and difficult problem, which is hard to formulate and solve.

The thesis consists of four main elements. First, the original algorithm of YASFM, which has not been really described in detail before, has been analyzed and better described. Secondly, the performance of the algorithm was analyzed in a series of targeted experiments and several situations when the algorithm fails were described. The main contribution of the thesis is in proposing to iterate the reconstruction process on data that could not be reconstructed and thus recover a better and more complete model. Since separately reconstructed models are typically reconstructed in different units, a partial model registration was used to bring models into a common coordinate system and consistent scale.

On the positive side, the thesis indeed developed an improvement of YASFM and demonstrated it in several well-designed experiments. On the negative side however, the thesis lacks sufficient detail in describing technical details. It is not easy to understand how and why things really work and one has to look into the implementation to fill in details that were not described in the text.

Jan Krček was a motivated student who was working systematically on the topic. He was communicating with Filip Šrajer and demonstrated good technical skill when analyzing previous solutions, suggesting his approach and implementing it. Unfortunately, the text of the thesis failed to present the depth and breadth of his work.

Jan Krček presented a useful work that improved previous approach. He fulfilled the goals set in the assignment. Unfortunately, the text of the thesis does not really present it on sufficient level of detail and with sufficient depth and breadth. Therefore, I recommend grade the thesis by C – good.

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