Bachelor thesis evaluation
"Automatic analysis of worker bee behavior in the vicinity of the honeybee queen"

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The aim of the thesis was to implement a system capable for automatic analysis of the surroundings of the honeybee queen. The system should be able to detect (and, if possible, track) the court bees that directly interact with the queen.

The assignment task was rather difficult mainly because of its interdisciplinary character and the necessity to work with rather difficult datasets. Fulfilling the thesis goals required to get acquainted with state-of-the-art machine learning, computer vision and tracking systems, gather and annotate data for testing, and run and evaluate the aforementioned methods. The student worked in a very systematic and autonomous manner, showing a steady progress towards the goal, achieving the final goal of the thesis, i.e., integration of the court detection node in the data collection system. He consulted his work on a regular basis and contributed not only to the software modules that are directly relevant to the thesis topic, but also to components capable to report important updates of the integrated system. He had to learn to work with the Robotic Operating System (ROS) and the way one implements and deploys ROS software modules. Moreover, he proved to be able to contribute to work performed by an international and interdisciplinary team of biologists, roboticists, and machine learning experts.

The thesis itself follows a logical structure, and its technical and language quality is high. The student explains the motivation and background of the task, provides an overview of the state-of-the-art methods and explains the criteria chosen for their evaluation. Finally, the thesis evaluates the performance of the investigated methods on the data that the student gathered and annotated. Overall, the thesis provides a good insight into the problem and the implemented method is mature enough to be integrated in the data collection system used in the H2020 RoboRoyale project.

Therefore, I propose to classify the thesis as

A - excellent.

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