

## I. IDENTIFICATION DATA

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|-------------------------------|---|
| <b>Thesis name:</b>           | <b>Autonomous Localization of Hexapod Walking Robot</b> |
| <b>Author's name:</b>         | <b>Jan Bayer</b>  |
| <b>Type of thesis :</b>       | bachelor  |
| <b>Faculty/Institute:</b>     | Faculty of Electrical Engineering (FEE)                 |
| <b>Department:</b>            | Department of Measurement                               |
| <b>Thesis reviewer:</b>       | Thomas Fischer  |
| <b>Reviewer's department:</b> | Department of Computer Science - FCEyN, UBA             |

## II. EVALUATION OF INDIVIDUAL CRITERIA

|   |                               |
|---|-------------------------------|
| <b>Assignment</b>   | challenging                   |
| <i>Evaluation of thesis difficulty of assignment.</i>   |                               |
| I found the thesis quite challenging for a bachelor student. The detailed analysis of SLAM methods, as well as computer vision methods, requires a lot of studying. Configuring and running third party systems on a single platform and retrieving unified data metrics, as well as running several trials on functioning robotic platforms in the real world also implies a lot of work.  |                               |
| <b>Satisfaction of assignment</b>   | fulfilled with minor objectic |
| <i>Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.</i>  |                               |
| I find the thesis definetly meets the proposed assignment. The experiments were extensive, well thought out, and cover the most important aspects of the localization quality comparison between the different systems. Some improvement opportunities: <ul style="list-style-type: none"> <li>- There is no comparison of the computational performance of the methods</li> <li>- The fashion in which experiments were performed (playback of ROS-bags) is not very well explained. More so for people with little or no knowledge of the ROS framework.</li> <li>- The experiment regarding hexapod heading is poorly explained, and may have some flaws.</li> <li>- Synchronization is assumed between the captured sensor data and the ground truth, which may not be very good because of different bus and OS delays.</li> </ul> |                               |
| <b>Method of conception</b>   | correct                       |
| <i>Assess that student has chosen correct approach or solution methods.</i>   |                               |
| The approach taken to compare the different systems was very extensive and well thought out. The most important advantages and disadvantages of each method could be highlighted by the results.  |                               |
| <b>Technical level</b>  | B - very good.                |
| <i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>   |                               |
| The detailed analysis of different SLAM methods gives great insight into the mechanics of these systems and the advantages and disadvantages of different visual methods. The reviewed literature was extensive and thorough. The acquired data is very valuable and may be used to do experiments on future work. The experience gained by the student in the fields of computer vision and applied robotics are very valuable for his formation.  |                               |
| <b>Formal and language level, scope of thesis</b>   | C - good.                     |
| <i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>   |                               |

Some ambiguities arise because of the use of natural language, that could have been complemented by accompanying mathematical notation. Also, english grammar needs to be improved. Technical language is used correctly and indicates a good understanding of the subject.

## Selection of sources, citation correctness

B - very good.

*Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.*

Sources correspond to state-of-the-art studies in the related fields, and were correctly used in the thesis, which indicates that the student has read and understood them carefully.

## Additional commentary and evaluation

*Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.*

The experimental results obtained in this thesis are very valuable to the field of visual SLAM systems, and in particular in the emerging field of hexapod robots, since they show performance differences among different state-of-the-art choices for visual based localization systems.

## III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

*Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during defense.*

I evaluate handed thesis with classification grade

Date:

Signature:

