

I. IDENTIFICATION DATA

| | |
|-------------------------------|--|
| Thesis name: | Temporal Models for Mobile Robot Visual Navigation |
| Author's name: | Eliška Dvořáková |
| Type of thesis: | <input type="text"/> |
| Faculty/Institute: | <input type="text"/> |
| Department: | Computer Science |
| Thesis reviewer: | Jaime Pulido Fentanes Ph.D. |
| Reviewer's department: | School of Computer Science, University of Lincoln |

II. EVALUATION OF INDIVIDUAL CRITERIA

| | |
|---|----------------------|
| Assignment | <input type="text"/> |
| <i>Evaluation of thesis difficulty of assignment.</i> | |
| <p>This thesis addresses an extremely important problem in mobile robotics such as long-term autonomous navigation. This is not an easy task because robots need environmental representations that can cope with changes in dynamic environments.</p> <p>This work presents a teach and repeat visual navigation methodology, that can work on changing environments by modeling the changing visual features by means of Fremen, a novel technique that models periodical changes by means of their frequency spectrum.</p> | |

| | |
|--|----------------------|
| Satisfaction of assignment | <input type="text"/> |
| <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> | |
| <p>The thesis delivers a ROS integrated visual navigation system that can cope with periodic changes in the environment making it able to perform in long-term scenarios. Fulfilling all objectives of the thesis.</p> | |

| | |
|--|----------------------|
| Method of conception | <input type="text"/> |
| <i>Assess that student has chosen correct approach or solution methods.</i> | |
| <p>This work presents a wide set of results that demonstrate the validity of the approach. Along with this results the student has presented multiple statistical analyses that study the performance of this method and a comparison against other methodologies. This has been done to a very satisfactory standard.</p> | |

| | |
|---|----------------------|
| Technical level | <input type="text"/> |
| <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> | |
| <p>The student has presented a detailed description of the components that are necessary for mobile robot navigation, which demonstrate the student's level of understanding of the field. The methodology and experimental framework are described to a very high scientific standard.</p> | |

| | |
|---|----------------------|
| Formal and language level, scope of thesis | <input type="text"/> |
| <i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i> | |
| <p>The thesis is well written and well delimited on its scope and contributions. However, the English of this thesis could be improved, particularly the introduction needs further editing. In this sense, the introduction also needs to be more focused on the objective of the work presented here and its contributions.</p> <p>A more detailed discussion of the contribution and its limitations would be desirable on the conclusions of this work. Finally, it would be interesting to have the student discuss this work shortcomings and discussion how to address them.</p> | |

Selection of sources, citation correctness

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.

The sources and citations presented on this work are well justified, however the state of the art chapter covers many topics very superficially and doesn't discuss closely related work and how this works fits on the bigger picture. This is something that could be notably improved.

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.

Please insert your commentary (voluntary evaluation).

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.

This thesis addresses an extremely important problem in mobile robotics such as long-term autonomous navigation. This work presents a ROS integrated visual navigation system that can cope with periodic changes in the environment by means of Fremen, a novel technique that models periodical changes by means of their frequency spectrum.

The work is mostly well written and presents interesting results, the methodology is in line with the most up-to-date state of the art techniques and it is very well described, the presented datasets are also an interesting contribution to the field. However, the relevant works discussed are not put into enough context for this work, also the introduction needs to present the contributions in a more clear way.

The student should discuss during the defense the possibility of improving the evaluation by tracking the robot with external perceptive systems such as GPS or visual tracking. Also, it would be good to discuss further the limitations of this approach and how to overcome them.

I evaluate handed thesis with classification grade

Date:

Signature: Jaime Pulido Fentanes