Master Thesis Proposal

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1. Master Thesis Information

Title: 3D VISUAL SLAM APPLIED TO LARGE-SCALE UNDERWATER SCENARIOS

Description: This MSC thesis aims to study the most recent published techniques in the field of Visual Simultaneous Localization and Mapping (V-SLAM). In particular we will focus on large-scale underwater environments and on the existing techniques available to speed up the process. Although the objectives may vary depending on the related literature and the achieved results, the main research field we plan to investigate is the filtering algorithms as a way of reducing the amount of data. It seems that almost all the current approaches can not perform consistent maps for large areas, mainly due to the increase of the computational cost and due to the uncertainties that become prohibitive when the scenario becomes larger.

Aims: In this master thesis, a survey will be conducted with the aim to classify, to identify pros and cons of the main approaches, and to detect also possible further improvements for large mission scenarios.

Tasks: To do a literature review that should enable the classification and identification of pros and cons of the current V-SLAM approaches. Afterwards, the most significant algorithms will be programmed and tested. Finally, existing gaps and further improvements will be discussed.

Planning: The master thesis is scheduled for a period of 15 weeks (3rd of March to 13th of June 2008), in which three milestones are defined: the submission of the master thesis proposal (7th of April 2008), the submission of the master thesis dissertation (13th of June 2008) and the final presentation of the master thesis (19th to 27th of June 2008). According to these fixed deadlines, the task scheduling is as follows:

Task	Estimated timing
Survey (bibliographical research)	4 weeks / 3rd March – 28th March
Classification (pros and cons)	1 weeks / 31st March – 4th April
Develop the most significant algorithms	3 weeks / 7th April – 25th April
Identify gaps and further improvements	4 weeks / 28th April – 23rd May
Write the master thesis dissertation	3 weeks / 26th May – 13th June

2. Supervisor Information

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