Universität Karlsruhe (TH)
Institut für Mess- und Regelungstechnik
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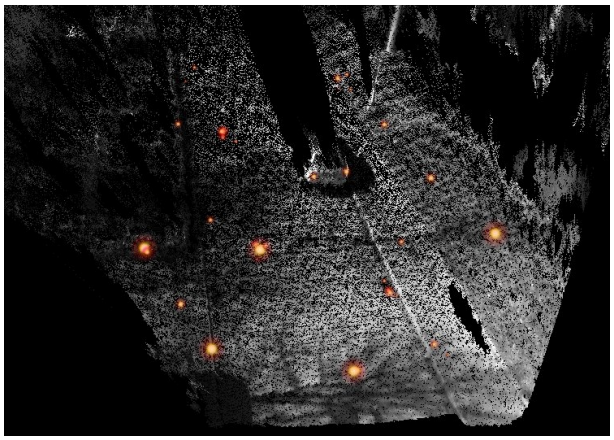
Master Thesis

Empirical Evaluation of Landmark Extraction and Association Strategies for Visual SLAM

A prominent problem in robotics resarch is the "Simultaneous Localization and Mapping (SLAM)" problem. A robot is traversing a previously unknown terrain and is learning a 3D representation of its vicinity (the map). While doing so it is localizing itself within this map. In this Master Thesis a subproblem shall be addressed. To this end the department of measurement and control uses its autonomous vehicle equiped with a stereo camera rig.
From the recorded stereo camera sequences salient points shall be extracted. These need to be matched in consecutive image frames. The task is now to implement and asses different feature extractors and association strategies. An existing Matlab framework exists and shall be extended accordingly.

(a) Test Vehicle



(b) Stereo reconstruction with highlighted landmarks

What we provide:	Interesting scientific reasearch with individual supervision
	Professional working atmosphere
Your qualification:	Bachelor/Grundstudium in e.g. engineering, computer science
	Self-reliant working
	Good Matlab skills
Head of Institute:	Prof. Dr.-Ing. C. Stiller
Assistant:	Dipl.-Inform. Henning Lategahn (henning.lategahn@kit.edu)
Start date:	as soon as possible

Please don't hesitate to contact me if you have further questions: henning.lategahn@kit.edu