High-Performance and Tunable Stereo Reconstruction

3D Vision Project Proposal
Supervised by: Enter your project supervisor here
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GROUP MEMBERS

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I. DESCRIPTION OF THE PROJECT

A high level description of the project, mentioning the main goal, the input and planned output data. Typically 4-5 sentences, also citing immediately related literature [1].

II. WORK PACKAGES AND TIMELINE

Detailed descriptions of work packages you planned, their outcomes, the responsible group member and estimated timeline. Specify the challenges that will be tackled and considered solutions with possible alternatives, citing related documents if applicable. Mention the platform (Android, PC etc.) and the language (C++ etc.) you plan to use.

III. OUTCOMES AND DEMONSTRATION

The goal of the project is to obtain an algorithm that computes the disparity image for a stereo camera pair at a considerable high frame rate on a single processor. If the dataset provides the ground truth poses, it will also be possible to create a point cloud of the scene from the disparity images. In order to value the outcome of this project, we want to compare the performance against other methods, such as SGBM[1] or ELAS[2]. Therefore we will set up an experiment to run our implementation against other methods on the same dataset and on the same machine, to be able to compare the run times.

Other than that, we want to estimate the accuracy of our implementation. Thus, we will compare the disparity images computed by our implementation with the ground truth disparity images of the dataset, if given.

Give detailed information on the expected outcome of your project and the experiments you plan to test your implementation. If applicable, describe the online or offline demo you plan to present at the end of the semester.

Instructions:
- The document should not exceed two pages including the references.
- Please name the document **3DVision_Proposal_Group_#.pdf** and send it to Federico Camposeco in an email titled **[3D Vision] Project Proposal - Group #**, filling in your group number.

REFERENCES

[1] John Doe and Jane Doe. A closely related paper. In *an awesome conference*, 2014.

[1] H. Hirschmller, "Accurate and efficient stereo processing by semi-global matching and mutual information", IEEE, 2005

[2] A. Geiger, J, Ziegler and C. Stiller, "Stereoscan, Dense 3D reconstruction in real-time", IEEE, 2011