High-Performance and Tunable Stereo Reconstruction

3D Vision Project Proposal
Supervised by: Peidong Liu
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GROUP MEMBERS

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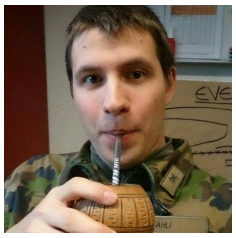

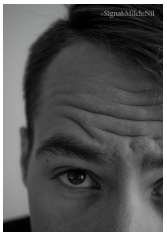

I. DESCRIPTION OF THE PROJECT

Conventional stereo algorithms are focused on getting qualitative reconstruction on datasets without considering run time performance, which results in the employment of computationally expensive techniques. Many applications such as mobile robots require fast perception of their surrounding in order to move and perform tasks in real-time. Therefore, this project is concerned with the implementation of a high-performance stereo disparity estimation algorithm described in [1]. It approximates large-scale disparities with a planar mesh. It is placed with sparsely matched keypoints at the beginning, and gets refined with every iteration. Hence it is possible to adjust the accuracy-versus-speed trade-off to the practical requirements.

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

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] Srikumar Ramalingam Sudeep Pillai and John J. Leonard. High-performance and tunable stereo reconstruction. In *High-Performance and Tunable Stereo Reconstruction*, 2015.