Using Stereo Vision for Object Distance Ranging

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I INTRODUCTION

Producing accurate depth-estimation of objects is a complex problem in computer vision, as images often contain noise due to inconsistent illumination, object occlusion and challenging weather conditions. In this report, I detail my approach to integrating state-of-the-art object detection (YOLO) with dense stereo ranging, and a high-level overview of this solution is given in Figure 1. I experimented with different implementations of stages 3-7 in order to improve performance under challenging conditions, and provide a comparative evaluation of these techniques in the remainder of the report.

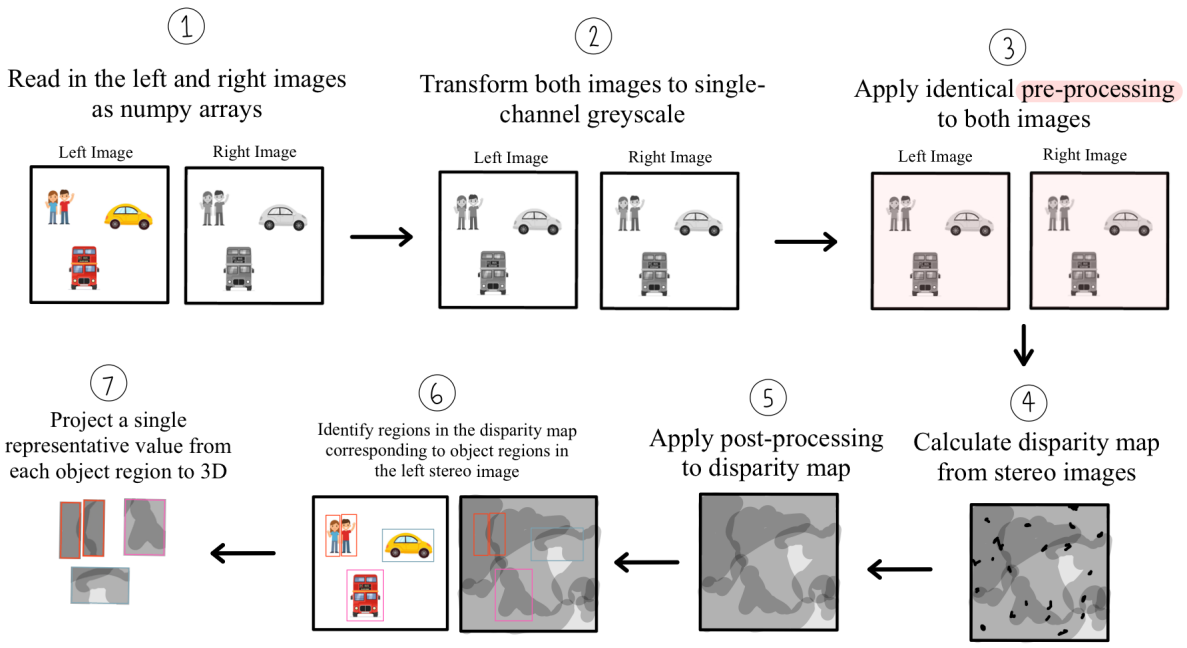
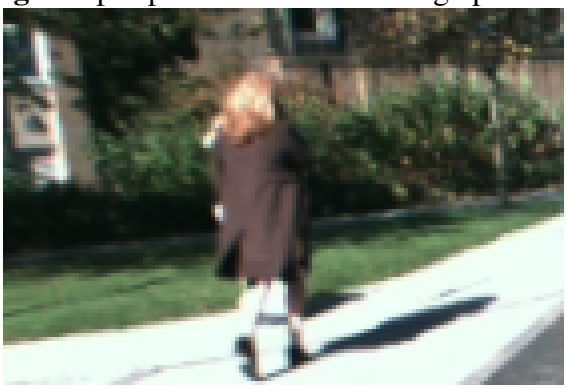


Figure 1: Solution overview

II SOLUTION DESIGN

Stereo image pre-processing In pre-process the stereo image pair in order to improve subsequent disparity calculations 

Disparity post-processing The disparity map is initially texturized and full of holes

III EVALUATION

The run-time of my solution is ... Most objects are detected ....

References

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