Predicting LIDAR Intensity from RGB and Depth Images

Project Report in computer science

vorgelegt von

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Abstract

This report explores the application of the Pix2Pix network for predicting LiDAR intensity mpas using RGB images and depth information as additional input. The used dense depth maps are created from the rgb images process thurg Bilateral Propagation Network for Depth Completion and the DepthAnything models (v1 and v2). This appproach used rgb pictures from the kitti dataset and demonstrastes significant imporvements in prediction accuraxy and robustnessover conventional methods

Chapter 1

Introduction

1.1 Motivation

LiDAR senors provide critical depth information for autonomous driving and robotics. The LiDAR intensity maps are often spares and incomplete. Using depht maps as an addtional input is a way to impove the richness and accuracy ot the LiDAR predection. The Pix2Pix network for image-to-image translation offers a promising approch for integrating these modalities.

1.2 Contribution

This project explores the use of the Pix2Pix network to predict LiDAR intensity maps by leveraging RGB images and depth maps as additional inputs.

1.3 Related Work

bpnet depth anything v1 2 and metric change pix2pix to 4 dim input

Chapter 2

Preparations

used google colab, pix2pix network getting the right input, pix2pix problems

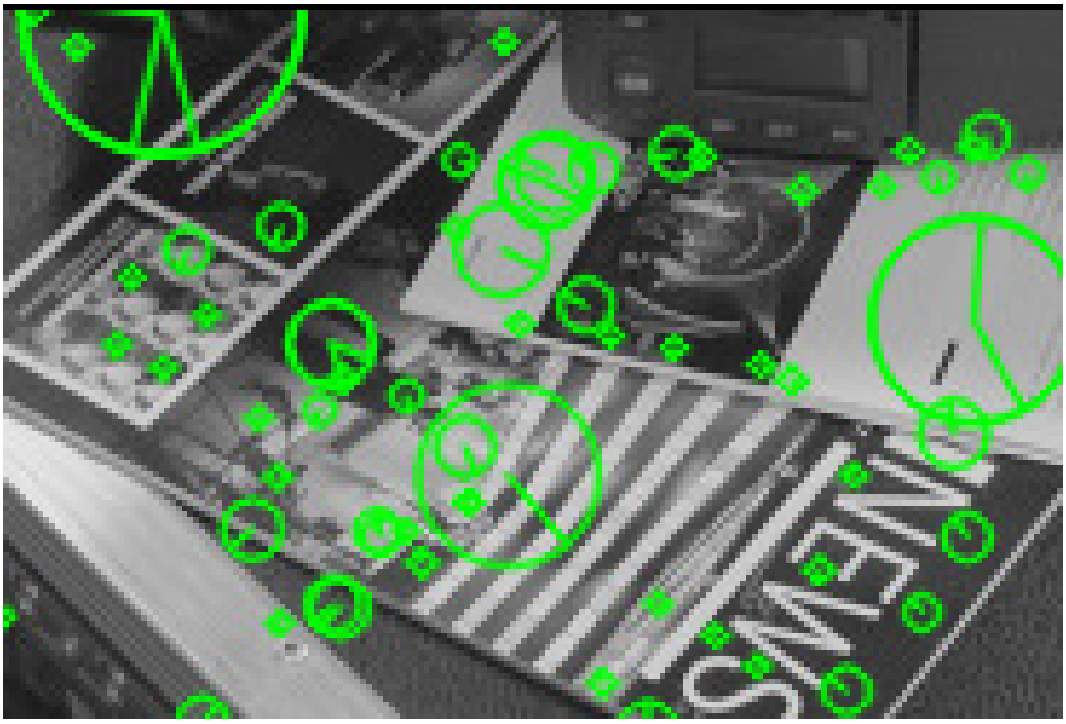

Figure 2.1: caption.

Chapter 3

Predicting LIDAR Intensity from RGB and Depth Images

3.1 Setup

The used the bp net it is for depth completion and depth prediction pix2pix model with modified data loader to get 4 dim. input rgb plus depth

3.2 Implementation

3.3 Results

test run rgb only. depht from depthanything the depth from depthanything v2 and metriv form depthanything v2 6 runs with different solution

Chapter 4

Conclusion

4.1 Appendix

4.2 References

bp net work pix2pix depth anything v1 2 paper for them some for lidar intensity

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