CFM AI&VR Weekly Report: Week #10 of 2019

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1   Summary

This week, I kept on reading the book **<14 lectures on visual SLAM>**, until now, I have finished the learning of Chapter 7 - Visual Odomettry, which is an important part of SLAM system. At the same time, I formed a team with my roommates to participate in some deep-learning competitions.

2   Book Reading: Chapter 4-7 of SLAM-BOOK

Chapter 4 to 6 of SLAM-BOOK are the foundation of mathematics of SLAM.

- Chapter 4: Lie group and Lie algeba, understand how to using Lie-algeba to present position and transformation, and make derivation. Master the usage of cpp library - Sophus.

- Chapter 5: Models of pinehole camera, RGBD-camera and binocular camera. Basic usage of openCV.

- Chapter 6: Use non-linear optimization methods to optimize non-linear function. Basic usage of cpp library - ceres and g2o.

- Chapter 7: Visual Odomettry via feature-based methods - typically ORB feature. Epipolar geometry(2D-2D), triangulation, PnP(3D-2D) and ICP(3D-3D). Use g2o to solve PnP and ICP problem.

The code is avaliable at `https://github.com/Yidadaa/Coding-Every-Day/tree/master/2019/slam-book-code`.

3   Competition: OPPO TOP AI Competition

We have reached almost rank 1(Percision: 0.96, Time: 4m50s) at the track of Semantic Segmentation. We use DeeplabV3 as baseline, and train it on VOC and Supervise.ly dataset.

4   Plan

I will continue reading SLAM-BOOK. And I am going to participate the JinNan Didital Manufacture Competition which is held on Ali TianChi. By the way, I am planing to post a proposal for Goole Summer Of Code 2019, the topic of the proposal is about SLAM in ROS.

- Textbook: <14 lectures on visual SLAM>, Chapter 7 - 8;

- Competition: OPPO TOP AI Competition;

- Competition: JinNan Didital Manufacture Competition;

- Proposal: Google Summer of Code 2019 - JdeRobot.