

Individual lab report #2 October 21, 2015

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Individual progress

Update Project Information on Website

For this week, I mainly response to the literal work for our project, update all the information we have already have on our website.

First, I need to modify the structure of the website, because this time we need to update more information than last time, so I need to create all the pages based on the assignment requirement first, then create the submenu to make the pages more classified.

Then collect information from all the teammates and the paper work we have done before such as presentation power point and conceptual design report and take the media documents of the mounting rack and camera status.

Finally update all the information on the website and generate the lacking part from CoDR about issue log and system design.

Learn Fundamental Knowledge of Deep Learning

For object detection, we want to do real time processing that means we need to use deep learning method, at this time the most mature algorithm is Faster R-CNN which was proposed by Shaoqing Ren, Kaiming He, Ross Girshick, and Jian Sun in 2015.

After reading the paper, from what I understand, the main thought for faster R-CNN is to use CNN to process so that can generate the region proposal much faster, and then project to last net of CNN then convolve with feature map.

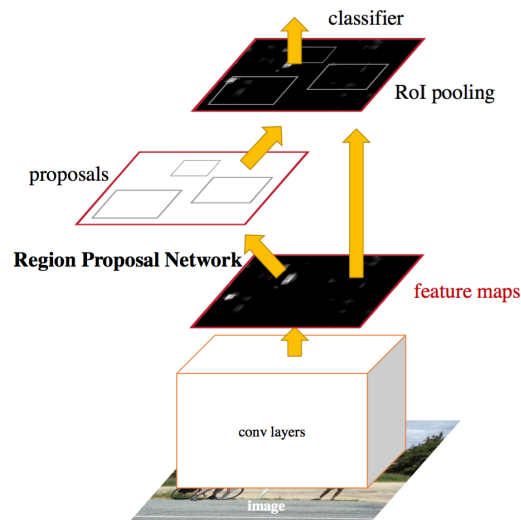


Figure 2: Faster R-CNN is a single, unified network for object detection. The RPN module serves as the ‘attention’ of this unified network.

So I want to go over CS231 from Stanford first, that class teaches the basic idea of R-CNN, then learn about Caffe frame to apply that on object detection of our project.

Challenges

When I designed the website, it takes me lots of time to find out how to organize the table in the page, then I finally use Microsoft Word to design the table first and then paste it on the pages. Another problem is the submenu, at first the submenu can not show on the homepage, then I find out the theme locations show choose primary menu, then the problem solved.

About Faster R-CNN, it takes me long time to understand then main thought of the algorithm because lacking of knowledge of the deep learning , also the weak English reading ability, so I searched the Chinese explanation of it first and get the basic idea about that, then it move faster than before. Also, having watching the video of CS231 on youtube help me understand the R-CNN and deep learning better.

Teamwork

Yihao shared me his experience on deep learning and propose that we should use Faster R-CNN method for object detection then, we shared the information and learning material we got online.

And all the team member give me material they have of the document we need to upload on the website.

Plans

Our team's goal for next week is :

System:

Work Breakdown Structure (WBS) and schedule

Choose appropriate platform for data processing (ROS ?)

Build power distribution system

Camera:

Finish prototype of the weather-proof camera housing

Install FlyCapture2 Full SDK and explore the features

Next step: Synchronization

Radar:

Set up radar properly so that data can be received and displayed

Check object detection capability

I'll help the system engineer presentation and try to set up the camera under Ubuntu environment and learn about SDK in Ubuntu environment, if things go well try to synchronize two camera.