

# Weekly Report

Adviser: Prof. Yang Wen

Student: Cheng Wensheng

Period: 2018.4.20-4.27

**Abstract**—This week I mainly put my effort on making power point slides of CETC 54 and having a meeting on this project.

## I. POWERPOINT SLIDES

AFTER reading most classic CNN-based semantic segmentation frameworks, I made a PPT to introduce our research.

- Fully convolutional network set up the foundation for CNN-based end-to-end framework. Its main contribution is to replace the fully connected layers with convolutional layers, which makes it possible to train end-to-end CNN-based frameworks with high precision.
- Following works including SegNet, DeepLab, PSPNet, etc. In summary, frameworks can be divided into two parts, i.e., encoder and decoder. Encoder part is used to capture semantic information from shallow to deep, which can be viewed as downsampling. Decoder part can acquire accurate location information, which in nature is upsampling. Fig. 1 is the DeepLab V3 architecture. Fig. 2 is the DeepLab V3+ Encoder-decoder architecture.

## II. PROJECT MEETING

We took part in the project meeting and discussed some details about the applied project.

- The major point is data. After the meeting, we know that we need to prepare training data by ourselves. The training data only contains R, G, B channels. Besides, we are supposed to get data with multiple resolutions, and find the best corresponding resolution to classify every object. It will take much effort.
- About the software framework, although TensorFlow is more mature on Windows, it's better not limit the framework to TensorFlow. Since Pytorch is much easier to create new frameworks and is preferred in research.

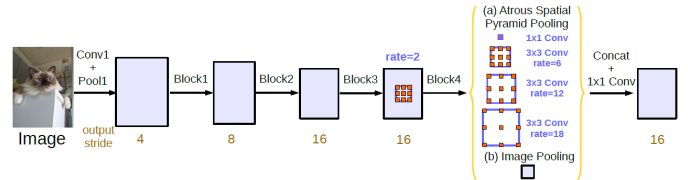


Fig. 1: DeepLab V3 architecture

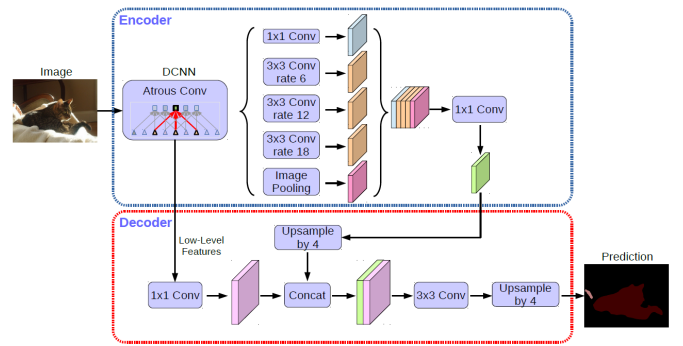


Fig. 2: DeepLab V3+ Encoder-decoder architecture