

Extra Topic: Summary of Others

According to the Reardon Michaela's report:

1. Tensorflow, PyTorch, Keras are tools of using to analysis the machine learning.
2. Machine learning is the art to make a prediction of the outcome of the future data. It's popular among recent years, including the face recognition, project detection and predict text.
3. Among the above tools, Tensorflow is recommended for machine learning beginners, since extensive documentation and tutorial are available.

TensorFlow

- Developed by Google
- Open Source
- Static Model Development
- Option to use TensorBoard, a graphical representation of TensorFlow
- Has multiple use methods (Python, JavaScript, Mobile, Production)
- Lots of add ons available
- Extended documentation, multiple tutorials

PyTorch

- Developed by Facebook
- Open Source
- Able to build Dynamic modeling
- Simplistic, very similar to Python
- Good support

Reardon Michaela recommend Tensorflow because of its static models allow parallelism and faster, more efficient training.

According to Zuo Hao's report: Focus on Tensorflow

1. Tensorflow is easy to get started. The preparation for user is to install python, Jupyter notebook and Tensorflow. Don't forget the related dataset API.
2. Define the model architecture: Preprocess, Predict, Postprocess, Loss and Restore.
3. Tensorflow has faster speed and high accuracy comparing to other similar tools.

Zuo Hao recommend Tensorflow because of its powerful back up (supported by google):

1. It's more friendly for beginners to learn the related algorithms before using the model or establish own models.
2. For the current situation, need to choose the correct dataset.

The Tensorflow Zoo also provide tons of models which used for segment detection and it's very easy to get started and it also has a high cost performance.

According to Zhang Ting's report: Focus on pre-train models

1. CNN: CNN is help to the reduce the dimension of images and this is the reason why users choose this model for objection detection. Large image contains more data and might cause the prediction more complex.
2. R-CNN: The R-CNN is the high level of CNN. This model can detect the location of the objects in the image. In RCNN, the possible regions can be detected and use a box include it. Then use the CNN to decide the prediction of this object.
3. Faster R-CNN: In the R-CNN models, the input value to the CNN is not just the region but the whole image. It can reduce the computation by generation the value map by not reduce its dimension.
4. Mask-RCNN: The Mask-RCNN is very common to use for solving the object detection. Mask-RCNN model is the extension of the model of Faster-RCNN. Base on the Faster-RCNN, Mask-RCNN add a branch for inferring segmentation masks on the ROI.

For the objection detection, Zhang Ting recommend the Mask-RCNN model, it can also use for the instance segmentation. Comparing to the Fast R-CNN, it can only use the bounding box regression.