Image Classification & Objecct Detection 代码实践

创建简单的CNN网络以用于图像分类
openExample('nnet/TrainABasicConvolutionalNeuralNetworkForClassificationExample')

使用GoogLeNet对网络摄像头图像进行分类
openExample('nnet/ClassifyImagesFromWebcamUsingDeepLearningExample')

使用预训练GoogLeNet对新图像进行分类（迁移学习）
openExample('nnet/TransferLearningUsingGoogLeNetExample')

创建 FasterRCNN 网络并用于目标检测
openExample('vision/CreateFasterRCNNObjectDetectionNetworkExample')
openExample('deeplearning_shared/DeepLearningFasterRCNNObjectDetectionExample')

使用 Yolov3 用于目标检测
openExample('deeplearning_shared/ObjectDetectionUsingYOLOV3DeepLearningExample')

使用 SSD 用于目标检测
openExample('deeplearning_shared/ObjectDetectionUsingSSDDeepLearningExample')

1 Create Simple Deep Learning Network for Classification

- Load and Explore Image Data
- Specify Training and Validation Sets
- Define Network Architecture
- Specify Training Options
- Train Network Using Training Data
- Classify Validation Images and Compute Accuracy

2 Classify Webcam Images Using Deep Learning

Load Camera and Pretrained Network

Classify Snapshot from Camera

Continuously Classify Images from Camera

Display Top Predictions

Continuously Classify Images and Display Top Predictions

3 Train Deep Learning Network to Classify New Images

Load Data

Load Pretrained Network

Replace Final Layers

Freeze Initial Layers

Train Network

Classify Validation Images

4 Create Faster R-CNN Object Detection Network

Create Fast R-CNN Network

Add Region Proposal Network (RPN)

5 Object Detection Using Faster R-CNN Deep Learning

Download Pretrained Detector

Load Data Set

Create Faster R-CNN Detection Network

Data Augmentation

Preprocess Training Data

Train Faster R-CNN

Evaluate Detector Using Test Set

Supporting Functions

References

6 Object Detection Using YOLO v3 Deep Learning

7 Object Detection Using SSD Deep Learning