NHZIX / **Merge_bn_Caffe**

Merge Batch Normalization in caffe

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models	fuse bn to conv and fc	8 months ago
10.jpg	fuse bn to conv and fc	8 months ago
README.md	Update README.md	3 months ago
convert_2_nonbnn.py	fuse bn to conv and fc	8 months ago
test_convert.py	tiny modify	8 months ago

README.md

Merge Batch Normalization in caffe

This implementation is about a fusion of batch normalization with convolution or fully connected layers in CNN of Caffe.

Introduction

Caffe uses two layers to implement bn:

```
layer {
  name: "conv1-bn"
  type: "BatchNorm"
  bottom: "conv1"
  top: "conv1"
  param {
    lr_mult: 0
    decay_mult: 0
  }
  param {
    lr_mult: 0
    decay_mult: 0
  }
  param {
    lr_mult: 0
    decay_mult: 0
  }
  batch_norm_param {
    moving_average_fraction: 0.99
    eps: 1e-8
  }
}
layer {
  name: "conv1-bn-scale"
  type: "Scale"
  bottom: "conv1"
```

```
    top: "conv1"
    param {
      lr_mult: 1
      decay_mult: 0
    }
    param {
      lr_mult: 1
      decay_mult: 1
    }
    scale_param {
      axis: 1
      num_axes: 1
      filler {
        type: "constant"
        value: 1
      }
      bias_term: true
      bias_filler {
        type: "constant"
        value: 0
      }
    }
  }
```

When a model training is finished, both batch norm and scale layer learn their own parameters, these parameters are fixed during inference. So, we can merget it with the convolution or fully connected layer.

For MORE details about batch normalization，see here

Demo

Note:

RUN `python convert_2_nonbnn.py` to convert the normal network to the one without bn.

RUN `python test_convert.py` to test the demo network.