```
input: "data"
input_shape {
  dim: 1
  dim: 3
  dim: 300
  dim: 300
}

layer {
  name: "data_bn"
  type: "BatchNorm"
  bottom: "data"
  top: "data_bn"
  param {
    lr_mult: 0.0
  }
  param {
    lr_mult: 0.0
  }
  param {
    lr_mult: 0.0
  }
}
layer {
  name: "data_scale"
  type: "Scale"
  bottom: "data_bn"
  top: "data_bn"
  param {
    lr_mult: 1.0
    decay_mult: 1.0
```

```
  }
  param {
   lr_mult: 2.0
   decay_mult: 1.0
  }
  scale_param {
   bias_term: true
  }
 }
layer {
 name: "conv1_h"
 type: "Convolution"
 bottom: "data_bn"
 top: "conv1_h"
 param {
  lr_mult: 1.0
  decay_mult: 1.0
 }
 param {
  lr_mult: 2.0
  decay_mult: 1.0
 }
 convolution_param {
  num_output: 32
  pad: 3
  kernel_size: 7
  stride: 2
  weight_filler {
   type: "msra"
   variance_norm: FAN_OUT
  }
```

```
    bias_filler {
      type: "constant"
      value: 0.0
    }
  }
}
layer {
  name: "conv1_bn_h"
  type: "BatchNorm"
  bottom: "conv1_h"
  top: "conv1_h"
  param {
    lr_mult: 0.0
  }
  param {
    lr_mult: 0.0
  }
  param {
    lr_mult: 0.0
  }
}
layer {
  name: "conv1_scale_h"
  type: "Scale"
  bottom: "conv1_h"
  top: "conv1_h"
  param {
    lr_mult: 1.0
    decay_mult: 1.0
  }
  param {
```

```
    lr_mult: 2.0

    decay_mult: 1.0

   }

   scale_param {

    bias_term: true

   }

 }

 layer {

  name: "conv1_relu"

  type: "ReLU"

  bottom: "conv1_h"

  top: "conv1_h"

 }

 layer {

  name: "conv1_pool"

  type: "Pooling"

  bottom: "conv1_h"

  top: "conv1_pool"

  pooling_param {

   kernel_size: 3

   stride: 2

  }

 }

 layer {

  name: "layer_64_1_conv1_h"

  type: "Convolution"

  bottom: "conv1_pool"

  top: "layer_64_1_conv1_h"

  param {

   lr_mult: 1.0

   decay_mult: 1.0
```

```
  }
  convolution_param {
   num_output: 32
   bias_term: false
   pad: 1
   kernel_size: 3
   stride: 1
   weight_filler {
    type: "msra"
   }
   bias_filler {
    type: "constant"
    value: 0.0
   }
  }
}
layer {
 name: "layer_64_1_bn2_h"
 type: "BatchNorm"
 bottom: "layer_64_1_conv1_h"
 top: "layer_64_1_conv1_h"
 param {
  lr_mult: 0.0
 }
 param {
  lr_mult: 0.0
 }
 param {
  lr_mult: 0.0
 }
}
```

```
layer {
 name: "layer_64_1_scale2_h"
 type: "Scale"
 bottom: "layer_64_1_conv1_h"
 top: "layer_64_1_conv1_h"
 param {
  lr_mult: 1.0
  decay_mult: 1.0
 }
 param {
  lr_mult: 2.0
  decay_mult: 1.0
 }
 scale_param {
  bias_term: true
 }
}
layer {
 name: "layer_64_1_relu2"
 type: "ReLU"
 bottom: "layer_64_1_conv1_h"
 top: "layer_64_1_conv1_h"
}
layer {
 name: "layer_64_1_conv2_h"
 type: "Convolution"
 bottom: "layer_64_1_conv1_h"
 top: "layer_64_1_conv2_h"
 param {
  lr_mult: 1.0
  decay_mult: 1.0
```

```
    }
    convolution_param {
     num_output: 32
     bias_term: false
     pad: 1
     kernel_size: 3
     stride: 1
     weight_filler {
      type: "msra"
     }
     bias_filler {
      type: "constant"
      value: 0.0
     }
    }
   }
   layer {
    name: "layer_64_1_sum"
    type: "Eltwise"
    bottom: "layer_64_1_conv2_h"
    bottom: "conv1_pool"
    top: "layer_64_1_sum"
   }
   layer {
    name: "layer_128_1_bn1_h"
    type: "BatchNorm"
    bottom: "layer_64_1_sum"
    top: "layer_128_1_bn1_h"
    param {
     lr_mult: 0.0
    }
```

```
  param {
   lr_mult: 0.0
  }
  param {
   lr_mult: 0.0
  }
 }
 layer {
  name: "layer_128_1_scale1_h"
  type: "Scale"
  bottom: "layer_128_1_bn1_h"
  top: "layer_128_1_bn1_h"
  param {
   lr_mult: 1.0
   decay_mult: 1.0
  }
  param {
   lr_mult: 2.0
   decay_mult: 1.0
  }
  scale_param {
   bias_term: true
  }
 }
 layer {
  name: "layer_128_1_relu1"
  type: "ReLU"
  bottom: "layer_128_1_bn1_h"
  top: "layer_128_1_bn1_h"
 }
 layer {
```

```
name: "layer_128_1_conv1_h"
type: "Convolution"
bottom: "layer_128_1_bn1_h"
top: "layer_128_1_conv1_h"
param {
 lr_mult: 1.0
 decay_mult: 1.0
}
convolution_param {
 num_output: 128
 bias_term: false
 pad: 1
 kernel_size: 3
 stride: 2
 weight_filler {
  type: "msra"
 }
 bias_filler {
  type: "constant"
  value: 0.0
 }
}
}
layer {
 name: "layer_128_1_bn2"
 type: "BatchNorm"
 bottom: "layer_128_1_conv1_h"
 top: "layer_128_1_conv1_h"
 param {
  lr_mult: 0.0
 }
```

```
  param {
   lr_mult: 0.0
  }
  param {
   lr_mult: 0.0
  }
}
layer {
 name: "layer_128_1_scale2"
 type: "Scale"
 bottom: "layer_128_1_conv1_h"
 top: "layer_128_1_conv1_h"
 param {
  lr_mult: 1.0
  decay_mult: 1.0
 }
 param {
  lr_mult: 2.0
  decay_mult: 1.0
 }
 scale_param {
  bias_term: true
 }
}
layer {
 name: "layer_128_1_relu2"
 type: "ReLU"
 bottom: "layer_128_1_conv1_h"
 top: "layer_128_1_conv1_h"
}
layer {
```

```
  name: "layer_128_1_conv2"

  type: "Convolution"

  bottom: "layer_128_1_conv1_h"

  top: "layer_128_1_conv2"

  param {

   lr_mult: 1.0

   decay_mult: 1.0

  }

  convolution_param {

   num_output: 128

   bias_term: false

   pad: 1

   kernel_size: 3

   stride: 1

   weight_filler {

    type: "msra"

   }

   bias_filler {

    type: "constant"

    value: 0.0

   }

  }

}

layer {

  name: "layer_128_1_conv_expand_h"

  type: "Convolution"

  bottom: "layer_128_1_bn1_h"

  top: "layer_128_1_conv_expand_h"

  param {

   lr_mult: 1.0

   decay_mult: 1.0
```

```
    }
    convolution_param {
      num_output: 128
      bias_term: false
      pad: 0
      kernel_size: 1
      stride: 2
      weight_filler {
        type: "msra"
      }
      bias_filler {
        type: "constant"
        value: 0.0
      }
    }
  }
  layer {
    name: "layer_128_1_sum"
    type: "Eltwise"
    bottom: "layer_128_1_conv2"
    bottom: "layer_128_1_conv_expand_h"
    top: "layer_128_1_sum"
  }
  layer {
    name: "layer_256_1_bn1"
    type: "BatchNorm"
    bottom: "layer_128_1_sum"
    top: "layer_256_1_bn1"
    param {
      lr_mult: 0.0
    }
```

```
  param {
   lr_mult: 0.0
  }
  param {
   lr_mult: 0.0
  }
}
layer {
 name: "layer_256_1_scale1"
 type: "Scale"
 bottom: "layer_256_1_bn1"
 top: "layer_256_1_bn1"
 param {
  lr_mult: 1.0
  decay_mult: 1.0
 }
 param {
  lr_mult: 2.0
  decay_mult: 1.0
 }
 scale_param {
  bias_term: true
 }
}
layer {
 name: "layer_256_1_relu1"
 type: "ReLU"
 bottom: "layer_256_1_bn1"
 top: "layer_256_1_bn1"
}
layer {
```

```
  name: "layer_256_1_conv1"

  type: "Convolution"

  bottom: "layer_256_1_bn1"

  top: "layer_256_1_conv1"

  param {

   lr_mult: 1.0

   decay_mult: 1.0

  }

  convolution_param {

   num_output: 256

   bias_term: false

   pad: 1

   kernel_size: 3

   stride: 2

   weight_filler {

    type: "msra"

   }

   bias_filler {

    type: "constant"

    value: 0.0

   }

  }

 }

 layer {

  name: "layer_256_1_bn2"

  type: "BatchNorm"

  bottom: "layer_256_1_conv1"

  top: "layer_256_1_conv1"

  param {

   lr_mult: 0.0

  }
```

```
  param {
   lr_mult: 0.0
  }
  param {
   lr_mult: 0.0
  }
 }
 layer {
  name: "layer_256_1_scale2"
  type: "Scale"
  bottom: "layer_256_1_conv1"
  top: "layer_256_1_conv1"
  param {
   lr_mult: 1.0
   decay_mult: 1.0
  }
  param {
   lr_mult: 2.0
   decay_mult: 1.0
  }
  scale_param {
   bias_term: true
  }
 }
 layer {
  name: "layer_256_1_relu2"
  type: "ReLU"
  bottom: "layer_256_1_conv1"
  top: "layer_256_1_conv1"
 }
 layer {
```

```
  name: "layer_256_1_conv2"

  type: "Convolution"

  bottom: "layer_256_1_conv1"

  top: "layer_256_1_conv2"

  param {

   lr_mult: 1.0

   decay_mult: 1.0

  }

  convolution_param {

   num_output: 256

   bias_term: false

   pad: 1

   kernel_size: 3

   stride: 1

   weight_filler {

    type: "msra"

   }

   bias_filler {

    type: "constant"

    value: 0.0

   }

  }

 }

 layer {

  name: "layer_256_1_conv_expand"

  type: "Convolution"

  bottom: "layer_256_1_bn1"

  top: "layer_256_1_conv_expand"

  param {

   lr_mult: 1.0

   decay_mult: 1.0
```

```
    }
    convolution_param {
      num_output: 256
      bias_term: false
      pad: 0
      kernel_size: 1
      stride: 2
      weight_filler {
        type: "msra"
      }
      bias_filler {
        type: "constant"
        value: 0.0
      }
    }
  }
  layer {
    name: "layer_256_1_sum"
    type: "Eltwise"
    bottom: "layer_256_1_conv2"
    bottom: "layer_256_1_conv_expand"
    top: "layer_256_1_sum"
  }
  layer {
    name: "layer_512_1_bn1"
    type: "BatchNorm"
    bottom: "layer_256_1_sum"
    top: "layer_512_1_bn1"
    param {
      lr_mult: 0.0
    }
```

```
    param {
     lr_mult: 0.0
    }
    param {
     lr_mult: 0.0
    }
}
layer {
  name: "layer_512_1_scale1"
  type: "Scale"
  bottom: "layer_512_1_bn1"
  top: "layer_512_1_bn1"
  param {
    lr_mult: 1.0
    decay_mult: 1.0
  }
  param {
    lr_mult: 2.0
    decay_mult: 1.0
  }
  scale_param {
    bias_term: true
  }
}
layer {
  name: "layer_512_1_relu1"
  type: "ReLU"
  bottom: "layer_512_1_bn1"
  top: "layer_512_1_bn1"
}
layer {
```

```
  name: "layer_512_1_conv1_h"

  type: "Convolution"

  bottom: "layer_512_1_bn1"

  top: "layer_512_1_conv1_h"

  param {

   lr_mult: 1.0

   decay_mult: 1.0

  }

  convolution_param {

   num_output: 128

   bias_term: false

   pad: 1

   kernel_size: 3

   stride: 1 # 2

   weight_filler {

    type: "msra"

   }

   bias_filler {

    type: "constant"

    value: 0.0

   }

  }

}

layer {

 name: "layer_512_1_bn2_h"

 type: "BatchNorm"

 bottom: "layer_512_1_conv1_h"

 top: "layer_512_1_conv1_h"

 param {

  lr_mult: 0.0

 }
```

```
  param {
    lr_mult: 0.0
  }
  param {
    lr_mult: 0.0
  }
}
layer {
  name: "layer_512_1_scale2_h"
  type: "Scale"
  bottom: "layer_512_1_conv1_h"
  top: "layer_512_1_conv1_h"
  param {
    lr_mult: 1.0
    decay_mult: 1.0
  }
  param {
    lr_mult: 2.0
    decay_mult: 1.0
  }
  scale_param {
    bias_term: true
  }
}
layer {
  name: "layer_512_1_relu2"
  type: "ReLU"
  bottom: "layer_512_1_conv1_h"
  top: "layer_512_1_conv1_h"
}
layer {
```

```
  name: "layer_512_1_conv2_h"

  type: "Convolution"

  bottom: "layer_512_1_conv1_h"

  top: "layer_512_1_conv2_h"

  param {

   lr_mult: 1.0

   decay_mult: 1.0

  }

  convolution_param {

   num_output: 256

   bias_term: false

   pad: 2 # 1

   kernel_size: 3

   stride: 1

   dilation: 2

   weight_filler {

     type: "msra"

   }

   bias_filler {

     type: "constant"

     value: 0.0

   }

  }

}

layer {

  name: "layer_512_1_conv_expand_h"

  type: "Convolution"

  bottom: "layer_512_1_bn1"

  top: "layer_512_1_conv_expand_h"

  param {

   lr_mult: 1.0
```

```
      decay_mult: 1.0

    }

    convolution_param {

      num_output: 256

      bias_term: false

      pad: 0

      kernel_size: 1

      stride: 1 # 2

      weight_filler {

        type: "msra"

      }

      bias_filler {

        type: "constant"

        value: 0.0

      }

    }

  }

  layer {

    name: "layer_512_1_sum"

    type: "Eltwise"

    bottom: "layer_512_1_conv2_h"

    bottom: "layer_512_1_conv_expand_h"

    top: "layer_512_1_sum"

  }

  layer {

    name: "last_bn_h"

    type: "BatchNorm"

    bottom: "layer_512_1_sum"

    top: "layer_512_1_sum"

    param {

      lr_mult: 0.0
```

```
  }
  param {
   lr_mult: 0.0
  }
  param {
   lr_mult: 0.0
  }
 }
 layer {
  name: "last_scale_h"
  type: "Scale"
  bottom: "layer_512_1_sum"
  top: "layer_512_1_sum"
  param {
   lr_mult: 1.0
   decay_mult: 1.0
  }
  param {
   lr_mult: 2.0
   decay_mult: 1.0
  }
  scale_param {
   bias_term: true
  }
 }
 layer {
  name: "last_relu"
  type: "ReLU"
  bottom: "layer_512_1_sum"
  top: "fc7"
 }
```

```
layer {
  name: "conv6_1_h"
  type: "Convolution"
  bottom: "fc7"
  top: "conv6_1_h"
  param {
   lr_mult: 1
   decay_mult: 1
  }
  param {
   lr_mult: 2
   decay_mult: 0
  }
  convolution_param {
   num_output: 128
   pad: 0
   kernel_size: 1
   stride: 1
   weight_filler {
    type: "xavier"
   }
   bias_filler {
    type: "constant"
    value: 0
   }
  }
}
layer {
 name: "conv6_1_relu"
 type: "ReLU"
```

```
  bottom: "conv6_1_h"

  top: "conv6_1_h"

}

layer {

 name: "conv6_2_h"

 type: "Convolution"

 bottom: "conv6_1_h"

 top: "conv6_2_h"

 param {

  lr_mult: 1

  decay_mult: 1

 }

 param {

  lr_mult: 2

  decay_mult: 0

 }

 convolution_param {

  num_output: 256

  pad: 1

  kernel_size: 3

  stride: 2

  weight_filler {

   type: "xavier"

  }

  bias_filler {

   type: "constant"

   value: 0

  }

 }

}

layer {
```

```
  name: "conv6_2_relu"
  type: "ReLU"
  bottom: "conv6_2_h"
  top: "conv6_2_h"
}
layer {
  name: "conv7_1_h"
  type: "Convolution"
  bottom: "conv6_2_h"
  top: "conv7_1_h"
  param {
    lr_mult: 1
    decay_mult: 1
  }
  param {
    lr_mult: 2
    decay_mult: 0
  }
  convolution_param {
    num_output: 64
    pad: 0
    kernel_size: 1
    stride: 1
    weight_filler {
      type: "xavier"
    }
    bias_filler {
      type: "constant"
      value: 0
    }
  }
```

```
}
layer {
  name: "conv7_1_relu"
  type: "ReLU"
  bottom: "conv7_1_h"
  top: "conv7_1_h"
}
layer {
  name: "conv7_2_h"
  type: "Convolution"
  bottom: "conv7_1_h"
  top: "conv7_2_h"
  param {
    lr_mult: 1
    decay_mult: 1
  }
  param {
    lr_mult: 2
    decay_mult: 0
  }
  convolution_param {
    num_output: 128
    pad: 1
    kernel_size: 3
    stride: 2
    weight_filler {
      type: "xavier"
    }
    bias_filler {
      type: "constant"
      value: 0
```

```
    }
   }
  }
  layer {
   name: "conv7_2_relu"
   type: "ReLU"
   bottom: "conv7_2_h"
   top: "conv7_2_h"
  }
  layer {
   name: "conv8_1_h"
   type: "Convolution"
   bottom: "conv7_2_h"
   top: "conv8_1_h"
   param {
    lr_mult: 1
    decay_mult: 1
   }
   param {
    lr_mult: 2
    decay_mult: 0
   }
   convolution_param {
    num_output: 64
    pad: 0
    kernel_size: 1
    stride: 1
    weight_filler {
     type: "xavier"
    }
    bias_filler {
```

```
      type: "constant"
      value: 0
    }
  }
}
layer {
  name: "conv8_1_relu"
  type: "ReLU"
  bottom: "conv8_1_h"
  top: "conv8_1_h"
}
layer {
  name: "conv8_2_h"
  type: "Convolution"
  bottom: "conv8_1_h"
  top: "conv8_2_h"
  param {
    lr_mult: 1
    decay_mult: 1
  }
  param {
    lr_mult: 2
    decay_mult: 0
  }
  convolution_param {
    num_output: 128
    pad: 1
    kernel_size: 3
    stride: 1
    weight_filler {
      type: "xavier"
```

```
      }
      bias_filler {
        type: "constant"
        value: 0
      }
    }
  }
  layer {
    name: "conv8_2_relu"
    type: "ReLU"
    bottom: "conv8_2_h"
    top: "conv8_2_h"
  }
  layer {
    name: "conv9_1_h"
    type: "Convolution"
    bottom: "conv8_2_h"
    top: "conv9_1_h"
    param {
      lr_mult: 1
      decay_mult: 1
    }
    param {
      lr_mult: 2
      decay_mult: 0
    }
    convolution_param {
      num_output: 64
      pad: 0
      kernel_size: 1
      stride: 1
```

```
      weight_filler {

        type: "xavier"

      }

      bias_filler {

        type: "constant"

        value: 0

      }

    }

  }

  layer {

   name: "conv9_1_relu"

   type: "ReLU"

   bottom: "conv9_1_h"

   top: "conv9_1_h"

  }

  layer {

   name: "conv9_2_h"

   type: "Convolution"

   bottom: "conv9_1_h"

   top: "conv9_2_h"

   param {

    lr_mult: 1

    decay_mult: 1

   }

   param {

    lr_mult: 2

    decay_mult: 0

   }

   convolution_param {

    num_output: 128

    pad: 1
```

```
    kernel_size: 3

    stride: 1

    weight_filler {

      type: "xavier"

    }

    bias_filler {

      type: "constant"

      value: 0

    }

  }

}

layer {

  name: "conv9_2_relu"

  type: "ReLU"

  bottom: "conv9_2_h"

  top: "conv9_2_h"

}

layer {

  name: "conv4_3_norm"

  type: "Normalize"

  bottom: "layer_256_1_bn1"

  top: "conv4_3_norm"

  norm_param {

    across_spatial: false

    scale_filler {

      type: "constant"

      value: 20

    }

    channel_shared: false

  }

}
```

```
layer {
  name: "conv4_3_norm_mbox_loc"
  type: "Convolution"
  bottom: "conv4_3_norm"
  top: "conv4_3_norm_mbox_loc"
  param {
    lr_mult: 1
    decay_mult: 1
  }
  param {
    lr_mult: 2
    decay_mult: 0
  }
  convolution_param {
    num_output: 16
    pad: 1
    kernel_size: 3
    stride: 1
    weight_filler {
      type: "xavier"
    }
    bias_filler {
      type: "constant"
      value: 0
    }
  }
}
layer {
  name: "conv4_3_norm_mbox_loc_perm"
  type: "Permute"
  bottom: "conv4_3_norm_mbox_loc"
```

```
  top: "conv4_3_norm_mbox_loc_perm"
  permute_param {
    order: 0
    order: 2
    order: 3
    order: 1
  }
}
layer {
  name: "conv4_3_norm_mbox_loc_flat"
  type: "Flatten"
  bottom: "conv4_3_norm_mbox_loc_perm"
  top: "conv4_3_norm_mbox_loc_flat"
  flatten_param {
    axis: 1
  }
}
layer {
  name: "conv4_3_norm_mbox_conf"
  type: "Convolution"
  bottom: "conv4_3_norm"
  top: "conv4_3_norm_mbox_conf"
  param {
    lr_mult: 1
    decay_mult: 1
  }
  param {
    lr_mult: 2
    decay_mult: 0
  }
  convolution_param {
```

```
    num_output: 8 # 84

    pad: 1

    kernel_size: 3

    stride: 1

    weight_filler {

      type: "xavier"

    }

    bias_filler {

      type: "constant"

      value: 0

    }

  }

}

layer {

  name: "conv4_3_norm_mbox_conf_perm"

  type: "Permute"

  bottom: "conv4_3_norm_mbox_conf"

  top: "conv4_3_norm_mbox_conf_perm"

  permute_param {

    order: 0

    order: 2

    order: 3

    order: 1

  }

}

layer {

  name: "conv4_3_norm_mbox_conf_flat"

  type: "Flatten"

  bottom: "conv4_3_norm_mbox_conf_perm"

  top: "conv4_3_norm_mbox_conf_flat"

  flatten_param {
```

```
    axis: 1
  }
}
layer {
  name: "conv4_3_norm_mbox_priorbox"
  type: "PriorBox"
  bottom: "conv4_3_norm"
  bottom: "data"
  top: "conv4_3_norm_mbox_priorbox"
  prior_box_param {
    min_size: 30.0
    max_size: 60.0
    aspect_ratio: 2
    flip: true
    clip: false
    variance: 0.1
    variance: 0.1
    variance: 0.2
    variance: 0.2
    step: 8
    offset: 0.5
  }
}
layer {
  name: "fc7_mbox_loc"
  type: "Convolution"
  bottom: "fc7"
  top: "fc7_mbox_loc"
  param {
   lr_mult: 1
   decay_mult: 1
```

```
  }
  param {
   lr_mult: 2
   decay_mult: 0
  }
  convolution_param {
   num_output: 24
   pad: 1
   kernel_size: 3
   stride: 1
   weight_filler {
    type: "xavier"
   }
   bias_filler {
    type: "constant"
    value: 0
   }
  }
 }
 layer {
  name: "fc7_mbox_loc_perm"
  type: "Permute"
  bottom: "fc7_mbox_loc"
  top: "fc7_mbox_loc_perm"
  permute_param {
   order: 0
   order: 2
   order: 3
   order: 1
  }
 }
```

```
layer {
 name: "fc7_mbox_loc_flat"
 type: "Flatten"
 bottom: "fc7_mbox_loc_perm"
 top: "fc7_mbox_loc_flat"
 flatten_param {
  axis: 1
 }
}
layer {
 name: "fc7_mbox_conf"
 type: "Convolution"
 bottom: "fc7"
 top: "fc7_mbox_conf"
 param {
  lr_mult: 1
  decay_mult: 1
 }
 param {
  lr_mult: 2
  decay_mult: 0
 }
 convolution_param {
  num_output: 12 # 126
  pad: 1
  kernel_size: 3
  stride: 1
  weight_filler {
   type: "xavier"
  }
  bias_filler {
```

```
    type: "constant"
    value: 0
  }
 }
}
layer {
 name: "fc7_mbox_conf_perm"
 type: "Permute"
 bottom: "fc7_mbox_conf"
 top: "fc7_mbox_conf_perm"
 permute_param {
  order: 0
  order: 2
  order: 3
  order: 1
 }
}
layer {
 name: "fc7_mbox_conf_flat"
 type: "Flatten"
 bottom: "fc7_mbox_conf_perm"
 top: "fc7_mbox_conf_flat"
 flatten_param {
  axis: 1
 }
}
layer {
 name: "fc7_mbox_priorbox"
 type: "PriorBox"
 bottom: "fc7"
 bottom: "data"
```

```
  top: "fc7_mbox_priorbox"
  prior_box_param {
    min_size: 60.0
    max_size: 111.0
    aspect_ratio: 2
    aspect_ratio: 3
    flip: true
    clip: false
    variance: 0.1
    variance: 0.1
    variance: 0.2
    variance: 0.2
    step: 16
    offset: 0.5
  }
}
layer {
  name: "conv6_2_mbox_loc"
  type: "Convolution"
  bottom: "conv6_2_h"
  top: "conv6_2_mbox_loc"
  param {
    lr_mult: 1
    decay_mult: 1
  }
  param {
    lr_mult: 2
    decay_mult: 0
  }
  convolution_param {
    num_output: 24
```

```
    pad: 1

    kernel_size: 3

    stride: 1

    weight_filler {

      type: "xavier"

    }

    bias_filler {

      type: "constant"

      value: 0

    }

  }

}

layer {

  name: "conv6_2_mbox_loc_perm"

  type: "Permute"

  bottom: "conv6_2_mbox_loc"

  top: "conv6_2_mbox_loc_perm"

  permute_param {

    order: 0

    order: 2

    order: 3

    order: 1

  }

}

layer {

  name: "conv6_2_mbox_loc_flat"

  type: "Flatten"

  bottom: "conv6_2_mbox_loc_perm"

  top: "conv6_2_mbox_loc_flat"

  flatten_param {

    axis: 1
```

```
  }
}
layer {
  name: "conv6_2_mbox_conf"
  type: "Convolution"
  bottom: "conv6_2_h"
  top: "conv6_2_mbox_conf"
  param {
   lr_mult: 1
   decay_mult: 1
  }
  param {
   lr_mult: 2
   decay_mult: 0
  }
  convolution_param {
   num_output: 12 # 126
   pad: 1
   kernel_size: 3
   stride: 1
   weight_filler {
    type: "xavier"
   }
   bias_filler {
    type: "constant"
    value: 0
   }
  }
}
layer {
  name: "conv6_2_mbox_conf_perm"
```

```
  type: "Permute"

  bottom: "conv6_2_mbox_conf"

  top: "conv6_2_mbox_conf_perm"

  permute_param {

   order: 0

   order: 2

   order: 3

   order: 1

  }

}

layer {

 name: "conv6_2_mbox_conf_flat"

 type: "Flatten"

 bottom: "conv6_2_mbox_conf_perm"

 top: "conv6_2_mbox_conf_flat"

 flatten_param {

  axis: 1

 }

}

layer {

 name: "conv6_2_mbox_priorbox"

 type: "PriorBox"

 bottom: "conv6_2_h"

 bottom: "data"

 top: "conv6_2_mbox_priorbox"

 prior_box_param {

  min_size: 111.0

  max_size: 162.0

  aspect_ratio: 2

  aspect_ratio: 3

  flip: true
```

```
    clip: false

    variance: 0.1

    variance: 0.1

    variance: 0.2

    variance: 0.2

    step: 32

    offset: 0.5

  }

}

layer {

  name: "conv7_2_mbox_loc"

  type: "Convolution"

  bottom: "conv7_2_h"

  top: "conv7_2_mbox_loc"

  param {

   lr_mult: 1

   decay_mult: 1

  }

  param {

   lr_mult: 2

   decay_mult: 0

  }

  convolution_param {

   num_output: 24

   pad: 1

   kernel_size: 3

   stride: 1

   weight_filler {

    type: "xavier"

   }

   bias_filler {
```

```
    type: "constant"

    value: 0

  }

 }

}

layer {

 name: "conv7_2_mbox_loc_perm"

 type: "Permute"

 bottom: "conv7_2_mbox_loc"

 top: "conv7_2_mbox_loc_perm"

 permute_param {

  order: 0

  order: 2

  order: 3

  order: 1

 }

}

layer {

 name: "conv7_2_mbox_loc_flat"

 type: "Flatten"

 bottom: "conv7_2_mbox_loc_perm"

 top: "conv7_2_mbox_loc_flat"

 flatten_param {

  axis: 1

 }

}

layer {

 name: "conv7_2_mbox_conf"

 type: "Convolution"

 bottom: "conv7_2_h"

 top: "conv7_2_mbox_conf"
```

```
  param {
   lr_mult: 1
   decay_mult: 1
  }
  param {
   lr_mult: 2
   decay_mult: 0
  }
  convolution_param {
   num_output: 12 # 126
   pad: 1
   kernel_size: 3
   stride: 1
   weight_filler {
    type: "xavier"
   }
   bias_filler {
    type: "constant"
    value: 0
   }
  }
 }
layer {
 name: "conv7_2_mbox_conf_perm"
 type: "Permute"
 bottom: "conv7_2_mbox_conf"
 top: "conv7_2_mbox_conf_perm"
 permute_param {
  order: 0
  order: 2
  order: 3
```

```
    order: 1
  }
}
layer {
  name: "conv7_2_mbox_conf_flat"
  type: "Flatten"
  bottom: "conv7_2_mbox_conf_perm"
  top: "conv7_2_mbox_conf_flat"
  flatten_param {
    axis: 1
  }
}
layer {
  name: "conv7_2_mbox_priorbox"
  type: "PriorBox"
  bottom: "conv7_2_h"
  bottom: "data"
  top: "conv7_2_mbox_priorbox"
  prior_box_param {
    min_size: 162.0
    max_size: 213.0
    aspect_ratio: 2
    aspect_ratio: 3
    flip: true
    clip: false
    variance: 0.1
    variance: 0.1
    variance: 0.2
    variance: 0.2
    step: 64
    offset: 0.5
```

```
  }
 }
 layer {
  name: "conv8_2_mbox_loc"
  type: "Convolution"
  bottom: "conv8_2_h"
  top: "conv8_2_mbox_loc"
  param {
   lr_mult: 1
   decay_mult: 1
  }
  param {
   lr_mult: 2
   decay_mult: 0
  }
  convolution_param {
   num_output: 16
   pad: 1
   kernel_size: 3
   stride: 1
   weight_filler {
    type: "xavier"
   }
   bias_filler {
    type: "constant"
    value: 0
   }
  }
 }
 layer {
  name: "conv8_2_mbox_loc_perm"
```

```
    type: "Permute"
    bottom: "conv8_2_mbox_loc"
    top: "conv8_2_mbox_loc_perm"
    permute_param {
      order: 0
      order: 2
      order: 3
      order: 1
    }
  }
  layer {
    name: "conv8_2_mbox_loc_flat"
    type: "Flatten"
    bottom: "conv8_2_mbox_loc_perm"
    top: "conv8_2_mbox_loc_flat"
    flatten_param {
      axis: 1
    }
  }
  layer {
    name: "conv8_2_mbox_conf"
    type: "Convolution"
    bottom: "conv8_2_h"
    top: "conv8_2_mbox_conf"
    param {
      lr_mult: 1
      decay_mult: 1
    }
    param {
      lr_mult: 2
      decay_mult: 0
```

```
    }
    convolution_param {
      num_output: 8 # 84
      pad: 1
      kernel_size: 3
      stride: 1
      weight_filler {
        type: "xavier"
      }
      bias_filler {
        type: "constant"
        value: 0
      }
    }
  }
  layer {
    name: "conv8_2_mbox_conf_perm"
    type: "Permute"
    bottom: "conv8_2_mbox_conf"
    top: "conv8_2_mbox_conf_perm"
    permute_param {
      order: 0
      order: 2
      order: 3
      order: 1
    }
  }
  layer {
    name: "conv8_2_mbox_conf_flat"
    type: "Flatten"
    bottom: "conv8_2_mbox_conf_perm"
```

```
    top: "conv8_2_mbox_conf_flat"

    flatten_param {

      axis: 1

    }

  }

  layer {

    name: "conv8_2_mbox_priorbox"

    type: "PriorBox"

    bottom: "conv8_2_h"

    bottom: "data"

    top: "conv8_2_mbox_priorbox"

    prior_box_param {

      min_size: 213.0

      max_size: 264.0

      aspect_ratio: 2

      flip: true

      clip: false

      variance: 0.1

      variance: 0.1

      variance: 0.2

      variance: 0.2

      step: 100

      offset: 0.5

    }

  }

  layer {

    name: "conv9_2_mbox_loc"

    type: "Convolution"

    bottom: "conv9_2_h"

    top: "conv9_2_mbox_loc"

    param {
```

```
    lr_mult: 1

    decay_mult: 1

  }

  param {

   lr_mult: 2

    decay_mult: 0

  }

  convolution_param {

    num_output: 16

    pad: 1

    kernel_size: 3

    stride: 1

    weight_filler {

      type: "xavier"

    }

    bias_filler {

      type: "constant"

      value: 0

    }

  }

}

layer {

  name: "conv9_2_mbox_loc_perm"

  type: "Permute"

  bottom: "conv9_2_mbox_loc"

  top: "conv9_2_mbox_loc_perm"

  permute_param {

   order: 0

   order: 2

   order: 3

   order: 1
```

```
  }
}
layer {
  name: "conv9_2_mbox_loc_flat"
  type: "Flatten"
  bottom: "conv9_2_mbox_loc_perm"
  top: "conv9_2_mbox_loc_flat"
  flatten_param {
    axis: 1
  }
}
layer {
  name: "conv9_2_mbox_conf"
  type: "Convolution"
  bottom: "conv9_2_h"
  top: "conv9_2_mbox_conf"
  param {
    lr_mult: 1
    decay_mult: 1
  }
  param {
    lr_mult: 2
    decay_mult: 0
  }
  convolution_param {
    num_output: 8 # 84
    pad: 1
    kernel_size: 3
    stride: 1
    weight_filler {
      type: "xavier"
```

```
      }
      bias_filler {
        type: "constant"
        value: 0
      }
    }
  }
  layer {
    name: "conv9_2_mbox_conf_perm"
    type: "Permute"
    bottom: "conv9_2_mbox_conf"
    top: "conv9_2_mbox_conf_perm"
    permute_param {
      order: 0
      order: 2
      order: 3
      order: 1
    }
  }
  layer {
    name: "conv9_2_mbox_conf_flat"
    type: "Flatten"
    bottom: "conv9_2_mbox_conf_perm"
    top: "conv9_2_mbox_conf_flat"
    flatten_param {
      axis: 1
    }
  }
  layer {
    name: "conv9_2_mbox_priorbox"
    type: "PriorBox"
```

```
  bottom: "conv9_2_h"

  bottom: "data"

  top: "conv9_2_mbox_priorbox"

  prior_box_param {

    min_size: 264.0

    max_size: 315.0

    aspect_ratio: 2

    flip: true

    clip: false

    variance: 0.1

    variance: 0.1

    variance: 0.2

    variance: 0.2

    step: 300

    offset: 0.5

  }

}

layer {

  name: "mbox_loc"

  type: "Concat"

  bottom: "conv4_3_norm_mbox_loc_flat"

  bottom: "fc7_mbox_loc_flat"

  bottom: "conv6_2_mbox_loc_flat"

  bottom: "conv7_2_mbox_loc_flat"

  bottom: "conv8_2_mbox_loc_flat"

  bottom: "conv9_2_mbox_loc_flat"

  top: "mbox_loc"

  concat_param {

    axis: 1

  }

}
```

```
layer {
 name: "mbox_conf"
 type: "Concat"
 bottom: "conv4_3_norm_mbox_conf_flat"
 bottom: "fc7_mbox_conf_flat"
 bottom: "conv6_2_mbox_conf_flat"
 bottom: "conv7_2_mbox_conf_flat"
 bottom: "conv8_2_mbox_conf_flat"
 bottom: "conv9_2_mbox_conf_flat"
 top: "mbox_conf"
 concat_param {
  axis: 1
 }
}
layer {
 name: "mbox_priorbox"
 type: "Concat"
 bottom: "conv4_3_norm_mbox_priorbox"
 bottom: "fc7_mbox_priorbox"
 bottom: "conv6_2_mbox_priorbox"
 bottom: "conv7_2_mbox_priorbox"
 bottom: "conv8_2_mbox_priorbox"
 bottom: "conv9_2_mbox_priorbox"
 top: "mbox_priorbox"
 concat_param {
  axis: 2
 }
}

layer {
 name: "mbox_conf_reshape"
```

```
  type: "Reshape"

  bottom: "mbox_conf"

  top: "mbox_conf_reshape"

  reshape_param {

    shape {

      dim: 0

      dim: -1

      dim: 2

    }

  }

}

layer {

  name: "mbox_conf_softmax"

  type: "Softmax"

  bottom: "mbox_conf_reshape"

  top: "mbox_conf_softmax"

  softmax_param {

    axis: 2

  }

}

layer {

  name: "mbox_conf_flatten"

  type: "Flatten"

  bottom: "mbox_conf_softmax"

  top: "mbox_conf_flatten"

  flatten_param {

    axis: 1

  }

}

layer {
```

```
name: "detection_out"
type: "DetectionOutput"
bottom: "mbox_loc"
bottom: "mbox_conf_flatten"
bottom: "mbox_priorbox"
top: "detection_out"
include {
  phase: TEST
}
detection_output_param {
  num_classes: 2
  share_location: true
  background_label_id: 0
  nms_param {
   nms_threshold: 0.45
   top_k: 400
  }
  code_type: CENTER_SIZE
  keep_top_k: 200
  confidence_threshold: 0.01
 }
}
```