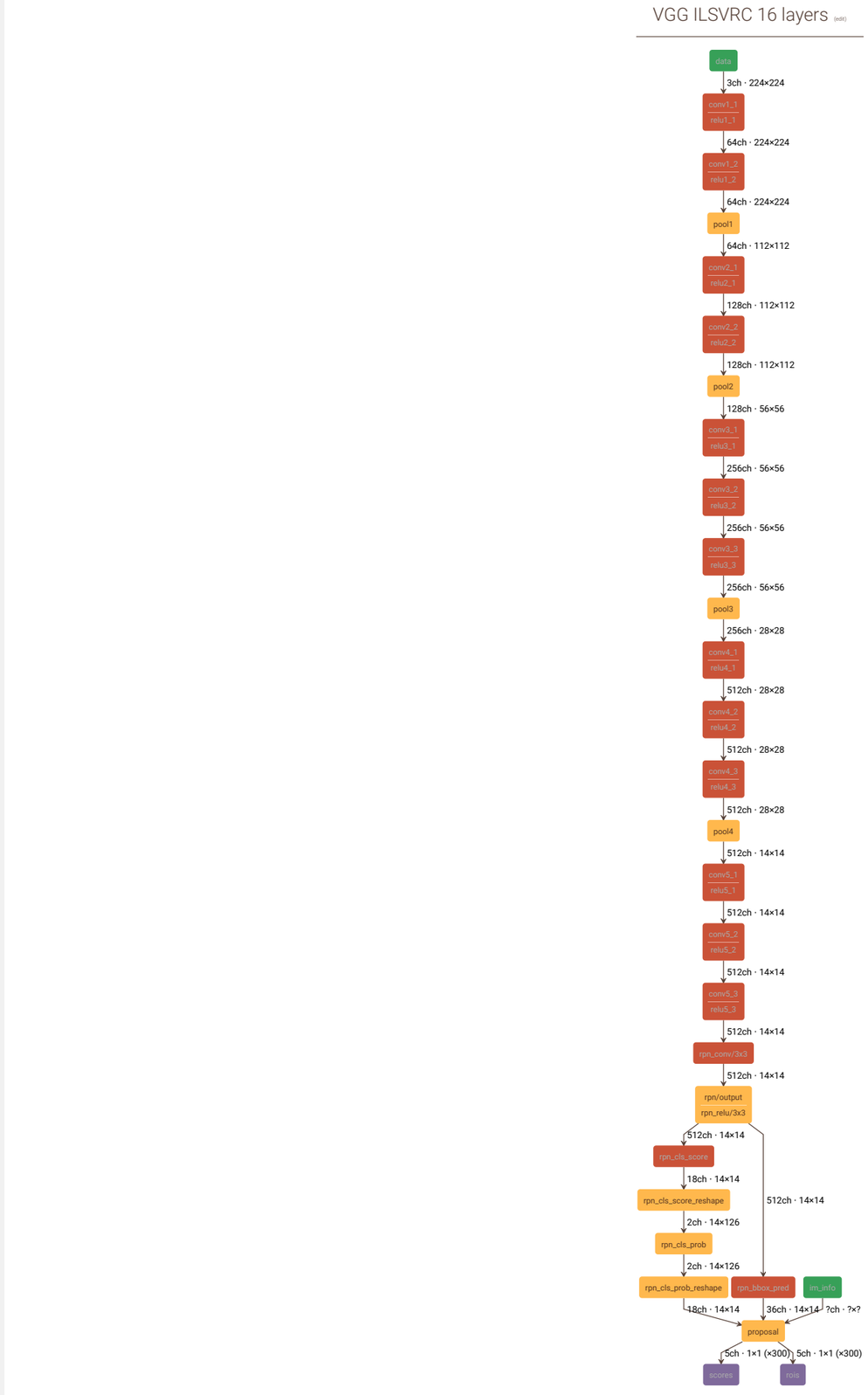
```
name: "VGG_ILSVRC_16_layers"

input: "data"
input_shape {
  dim: 1
  dim: 3
  dim: 224
  dim: 224
}

input: "im_info"
input_shape {
  dim: 1
  dim: 3
}

layer {
  name: "conv1_1"
  type: "Convolution"
  bottom: "data"
  top: "conv1_1"
  convolution_param {
    num_output: 64
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu1_1"
  type: "ReLU"
  bottom: "conv1_1"
  top: "conv1_1"
}
layer {
  name: "conv1_2"
  type: "Convolution"
  bottom: "conv1_1"
  top: "conv1_2"
  convolution_param {
    num_output: 64
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu1_2"
  type: "ReLU"
  bottom: "conv1_2"
  top: "conv1_2"
}
layer {
  name: "pool1"
  type: "Pooling"
  bottom: "conv1_2"
  top: "pool1"
  pooling_param {
    pool: MAX
    kernel_size: 2 stride: 2
  }
}
layer {
  name: "conv2_1"
  type: "Convolution"
  bottom: "pool1"
  top: "conv2_1"
  convolution_param {
    num_output: 128
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu2_1"
  type: "ReLU"
  bottom: "conv2_1"
  top: "conv2_1"
}
layer {
  name: "conv2_2"
  type: "Convolution"
  bottom: "conv2_1"
  top: "conv2_2"
  convolution_param {
    num_output: 128
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu2_2"
  type: "ReLU"
  bottom: "conv2_2"
  top: "conv2_2"
}
layer {
  name: "pool2"
  type: "Pooling"
  bottom: "conv2_2"
  top: "pool2"
  pooling_param {
    pool: MAX
    kernel_size: 2 stride: 2
  }
}
layer {
  name: "conv3_1"
  type: "Convolution"
  bottom: "pool2"
  top: "conv3_1"
  convolution_param {
    num_output: 256
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu3_1"
  type: "ReLU"
  bottom: "conv3_1"
  top: "conv3_1"
}
layer {
  name: "conv3_2"
  type: "Convolution"
  bottom: "conv3_1"
  top: "conv3_2"
  convolution_param {
    num_output: 256
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu3_2"
  type: "ReLU"
  bottom: "conv3_2"
  top: "conv3_2"
}
layer {
  name: "conv3_3"
  type: "Convolution"
  bottom: "conv3_2"
  top: "conv3_3"
  convolution_param {
    num_output: 256
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu3_3"
  type: "ReLU"
  bottom: "conv3_3"
  top: "conv3_3"
}
layer {
  name: "pool3"
  type: "Pooling"
  bottom: "conv3_3"
  top: "pool3"
  pooling_param {
    pool: MAX
    kernel_size: 2 stride: 2
  }
}
layer {
  name: "conv4_1"
  type: "Convolution"
  bottom: "pool3"
  top: "conv4_1"
```



Network Analysis

Summary:

```
  convolution_param {
    num_output: 512
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu4_1"
  type: "ReLU"
  bottom: "conv4_1"
  top: "conv4_1"
}
layer {
  name: "conv4_2"
  type: "Convolution"
  bottom: "conv4_1"
  top: "conv4_2"
  convolution_param {
    num_output: 512
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu4_2"
  type: "ReLU"
  bottom: "conv4_2"
  top: "conv4_2"
}
layer {
  name: "conv4_3"
  type: "Convolution"
  bottom: "conv4_2"
  top: "conv4_3"
  convolution_param {
    num_output: 512
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu4_3"
  type: "ReLU"
  bottom: "conv4_3"
  top: "conv4_3"
}
layer {
  name: "pool4"
  type: "Pooling"
  bottom: "conv4_3"
  top: "pool4"
  pooling_param {
    pool: MAX
    kernel_size: 2 stride: 2
  }
}
layer {
  name: "conv5_1"
  type: "Convolution"
  bottom: "pool4"
  top: "conv5_1"
  convolution_param {
    num_output: 512
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu5_1"
  type: "ReLU"
  bottom: "conv5_1"
  top: "conv5_1"
}
layer {
  name: "conv5_2"
  type: "Convolution"
  bottom: "conv5_1"
  top: "conv5_2"
  convolution_param {
    num_output: 512
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu5_2"
  type: "ReLU"
  bottom: "conv5_2"
  top: "conv5_2"
}
layer {
  name: "conv5_3"
  type: "Convolution"
  bottom: "conv5_2"
  top: "conv5_3"
  convolution_param {
    num_output: 512
    pad: 1 kernel_size: 3
  }
}
layer {
  name: "relu5_3"
  type: "ReLU"
  bottom: "conv5_3"
  top: "conv5_3"
}

######### RPN ############

layer {
  name: "rpn_conv/3x3"
  type: "Convolution"
  bottom: "conv5_3"
  top: "rpn/output"
  convolution_param {
    num_output: 512
    kernel_size: 3 pad: 1 stride: 1
  }
}
layer {
  name: "rpn_relu/3x3"
  type: "ReLU"
  bottom: "rpn/output"
  top: "rpn/output"
}

layer {
  name: "rpn_cls_score"
  type: "Convolution"
  bottom: "rpn/output"
  top: "rpn_cls_score"
  convolution_param {
    num_output: 18   # 2(bg/fg) * 9(anchors)
    kernel_size: 1 pad: 0 stride: 1
  }
}
layer {
  name: "rpn_bbox_pred"
  type: "Convolution"
  bottom: "rpn/output"
  top: "rpn_bbox_pred"
  convolution_param {
    num_output: 36   # 4 * 9(anchors)
    kernel_size: 1 pad: 0 stride: 1
  }
}
layer {
   bottom: "rpn_cls_score"
   top: "rpn_cls_score_reshape"
   name: "rpn_cls_score_reshape"
   type: "Reshape"
   reshape_param { shape { dim: 0 dim: 2 dim: -1 dim: 0 } }
}

######### RoI Proposal ############

layer {
  name: "rpn_cls_prob"
  type: "Softmax"
  bottom: "rpn_cls_score_reshape"
  top: "rpn_cls_prob"
}
layer {
  name: 'rpn_cls_prob_reshape'
  type: 'Reshape'
  bottom: 'rpn_cls_prob'
  top: 'rpn_cls_prob_reshape'
  reshape_param { shape { dim: 0 dim: 18 dim: -1 dim: 0 } }
```

ID	name	type	batch	ch_in	dim_in	ch_out	dim_out	ops	mem
1	data	data		3	224x224	3	224x224		**activation** 150.53k
2	conv1_1	Convolution		3	224x224	64	224x224	**macc** 86.7M	**activation** 3.21M **param** 1.79k
3	relu1_1	ReLU		64	224x224	64	224x224	**comp** 3.21M	**activation** 3.21M
4	conv1_2	Convolution		64	224x224	64	224x224	**macc** 1.85G	**activation** 3.21M **param** 36.93k
5	relu1_2	ReLU		64	224x224	64	224x224	**comp** 3.21M	**activation** 3.21M
6	pool1	Pooling		64	224x224	64	112x112	**comp** 3.21M	**activation** 802.82k
7	conv2_1	Convolution		64	112x112	128	112x112	**macc** 924.84M	**activation** 1.61M **param** 73.86k
8	relu2_1	ReLU		128	112x112	128	112x112	**comp** 1.61M	**activation** 1.61M
9	conv2_2	Convolution		128	112x112	128	112x112	**macc** 1.85G	**activation** 1.61M **param** 147.58k
10	relu2_2	ReLU		128	112x112	128	112x112	**comp** 1.61M	**activation** 1.61M
11	pool2	Pooling		128	112x112	128	56x56	**comp** 1.61M	**activation** 401.41k
12	conv3_1	Convolution		128	56x56	256	56x56	**macc** 924.84M	**activation** 802.82k **param** 295.17k
13	relu3_1	ReLU		256	56x56	256	56x56	**comp** 802.82k	**activation** 802.82k
14	conv3_2	Convolution		256	56x56	256	56x56	**macc** 1.85G	**activation** 802.82k **param** 590.08k
15	relu3_2	ReLU		256	56x56	256	56x56	**comp** 802.82k	**activation** 802.82k
16	conv3_3	Convolution		256	56x56	256	56x56	**macc** 1.85G	**activation** 802.82k **param** 590.08k
17	relu3_3	ReLU		256	56x56	256	56x56	**comp** 802.82k	**activation** 802.82k
18	pool3	Pooling		256	56x56	256	28x28	**comp** 802.82k	**activation** 200.7k
19	conv4_1	Convolution		256	28x28	512	28x28	**macc** 924.84M	**activation** 401.41k **param** 1.18M
20	relu4_1	ReLU		512	28x28	512	28x28	**comp** 401.41k	**activation** 401.41k
21	conv4_2	Convolution		512	28x28	512	28x28	**macc** 1.85G	**activation** 401.41k **param** 2.36M
22	relu4_2	ReLU		512	28x28	512	28x28	**comp** 401.41k	**activation** 401.41k
23	conv4_3	Convolution		512	28x28	512	28x28	**macc** 1.85G	**activation** 401.41k **param** 2.36M
24	relu4_3	ReLU		512	28x28	512	28x28	**comp** 401.41k	**activation** 401.41k
25	pool4	Pooling		512	28x28	512	14x14	**comp** 401.41k	**activation** 100.35k
26	conv5_1	Convolution		512	14x14	512	14x14	**macc** 462.42M	**activation** 100.35k **param** 2.36M
27	relu5_1	ReLU		512	14x14	512	14x14	**comp** 100.35k	**activation** 100.35k
28	conv5_2	Convolution		512	14x14	512	14x14	**macc** 462.42M	**activation** 100.35k **param** 2.36M
29	relu5_2	ReLU		512	14x14	512	14x14	**comp** 100.35k	**activation** 100.35k
30	conv5_3	Convolution		512	14x14	512	14x14	**macc** 462.42M	**activation** 100.35k **param** 2.36M
31	relu5_3	ReLU		512	14x14	512	14x14	**comp** 100.35k	**activation** 100.35k
32	rpn	submodule(1)		512	14x14	512	14x14	**macc** 462.42M	**activation** 200.7k **param** 2.36M
34	rpn_relu/3x3	ReLU		512	14x14	512	14x14	**comp** 100.35k	**activation** 100.35k
35	rpn_bbox_pred	Convolution		512	14x14	36	14x14	**macc** 3.61M	**activation** 7.06k **param** 18.47k
36	rpn_cls_score	Convolution		512	14x14	18	14x14	**macc** 1.81M	**activation** 3.53k **param** 9.23k
37	rpn_cls_score_reshape	Reshape		18	14x14	2	14x126		
38	rpn_cls_prob	Softmax		2	14x126	2	14x126	**add** 3.53k **div** 3.53k **exp** 3.53k	**activation** 3.53k
39	rpn_cls_prob_reshape	Reshape		2	14x126	18	14x14		
40	im_info	implicit		?	?x?	?	?x?		
41	proposal	Python		18	14x14	5	1x1	**macc** 103.81k **comp** 3.44M **add** 286.74k **div** 44.85k **exp** 3.53k	**activation** 1.5k
42	scores	implicit		5	1x1	5	1x1		**activation** 1.5k
43	rois	implicit		5	1x1	5	1x1		**activation** 1.5k
	TOTAL							**macc** 15.81G **comp** 23.11M	**activation** 29.07M **param** 17.1M

```
327 }
328 layer {
329   name: 'proposal'
330   type: 'Python'
331   bottom: 'rpn_cls_prob_reshape'
332   bottom: 'rpn_bbox_pred'
333   bottom: 'im_info'
334   top: 'rois'
335   top: 'scores'
336   python_param {
337     module: 'rpn.proposal_layer'
338     layer: 'ProposalLayer'
339     param_str: "'feat_stride': 16"
340   }
341 }
342
```

								add	290.27k
								div	48.38k
								exp	7.06k

Details:

ID	name	type	batch	ch_in	dim_in	ch_out	dim_out	ops_raw		mem_raw	
1	data	data	1	3	224x224	3	224x224	**macc**	0	**activation**	150528
								comp	0	**param**	0
								add	0		
								div	0		
								exp	0		
2	conv1_1	Convolution	1	3	224x224	64	224x224	**macc**	86704128	**activation**	3211264
								comp	0	**param**	1792
								add	0		
								div	0		
								exp	0		
3	relu1_1	ReLU	1	64	224x224	64	224x224	**macc**	0	**activation**	3211264
								comp	3211264	**param**	0
								add	0		
								div	0		
								exp	0		
4	conv1_2	Convolution	1	64	224x224	64	224x224	**macc**	1849688064	**activation**	3211264
								comp	0	**param**	36928
								add	0		
								div	0		
								exp	0		
5	relu1_2	ReLU	1	64	224x224	64	224x224	**macc**	0	**activation**	3211264
								comp	3211264	**param**	0
								add	0		
								div	0		
								exp	0		
6	pool1	Pooling	1	64	224x224	64	112x112	**macc**	0	**activation**	802816
								comp	3211264	**param**	0
								add	0		
								div	0		
								exp	0		
7	conv2_1	Convolution	1	64	112x112	128	112x112	**macc**	924844032	**activation**	1605632
								comp	0	**param**	73856
								add	0		
								div	0		
								exp	0		
8	relu2_1	ReLU	1	128	112x112	128	112x112	**macc**	0	**activation**	1605632
								comp	1605632	**param**	0
								add	0		
								div	0		
								exp	0		
9	conv2_2	Convolution	1	128	112x112	128	112x112	**macc**	1849688064	**activation**	1605632
								comp	0	**param**	147584
								add	0		
								div	0		
								exp	0		
10	relu2_2	ReLU	1	128	112x112	128	112x112	**macc**	0	**activation**	1605632
								comp	1605632	**param**	0
								add	0		
								div	0		
								exp	0		
11	pool2	Pooling	1	128	112x112	128	56x56	**macc**	0	**activation**	401408
								comp	1605632	**param**	0
								add	0		
								div	0		
								exp	0		
12	conv3_1	Convolution	1	128	56x56	256	56x56	**macc**	924844032	**activation**	802816
								comp	0	**param**	295168
								add	0		
								div	0		
								exp	0		
13	relu3_1	ReLU	1	256	56x56	256	56x56	**macc**	0	**activation**	802816
								comp	802816	**param**	0
								add	0		
								div	0		
								exp	0		
14	conv3_2	Convolution	1	256	56x56	256	56x56	**macc**	1849688064	**activation**	802816
								comp	0	**param**	590080
								add	0		
								div	0		
								exp	0		
15	relu3_2	ReLU	1	256	56x56	256	56x56	**macc**	0	**activation**	802816
								comp	802816	**param**	0
								add	0		

ID	name	type	batch	ch_in	dim_in	ch_out	dim_out		
								div 0	
								exp 0	
16	conv3_3	Convolution	1	256	56x56	256	56x56	**macc** 1849688064	**activation** 802816
								comp 0	**param** 590080
								add 0	
								div 0	
								exp 0	
17	relu3_3	ReLU	1	256	56x56	256	56x56	**macc** 0	**activation** 802816
								comp 802816	**param** 0
								add 0	
								div 0	
								exp 0	
18	pool3	Pooling	1	256	56x56	256	28x28	**macc** 0	**activation** 200704
								comp 802816	**param** 0
								add 0	
								div 0	
								exp 0	
19	conv4_1	Convolution	1	256	28x28	512	28x28	**macc** 924844032	**activation** 401408
								comp 0	**param** 1180160
								add 0	
								div 0	
								exp 0	
20	relu4_1	ReLU	1	512	28x28	512	28x28	**macc** 0	**activation** 401408
								comp 401408	**param** 0
								add 0	
								div 0	
								exp 0	
21	conv4_2	Convolution	1	512	28x28	512	28x28	**macc** 1849688064	**activation** 401408
								comp 0	**param** 2359808
								add 0	
								div 0	
								exp 0	
22	relu4_2	ReLU	1	512	28x28	512	28x28	**macc** 0	**activation** 401408
								comp 401408	**param** 0
								add 0	
								div 0	
								exp 0	
23	conv4_3	Convolution	1	512	28x28	512	28x28	**macc** 1849688064	**activation** 401408
								comp 0	**param** 2359808
								add 0	
								div 0	
								exp 0	
24	relu4_3	ReLU	1	512	28x28	512	28x28	**macc** 0	**activation** 401408
								comp 401408	**param** 0
								add 0	
								div 0	
								exp 0	
25	pool4	Pooling	1	512	28x28	512	14x14	**macc** 0	**activation** 100352
								comp 401408	**param** 0
								add 0	
								div 0	
								exp 0	
26	conv5_1	Convolution	1	512	14x14	512	14x14	**macc** 462422016	**activation** 100352
								comp 0	**param** 2359808
								add 0	
								div 0	
								exp 0	
27	relu5_1	ReLU	1	512	14x14	512	14x14	**macc** 0	**activation** 100352
								comp 100352	**param** 0
								add 0	
								div 0	
								exp 0	
28	conv5_2	Convolution	1	512	14x14	512	14x14	**macc** 462422016	**activation** 100352
								comp 0	**param** 2359808
								add 0	
								div 0	
								exp 0	
29	relu5_2	ReLU	1	512	14x14	512	14x14	**macc** 0	**activation** 100352
								comp 100352	**param** 0
								add 0	
								div 0	
								exp 0	
30	conv5_3	Convolution	1	512	14x14	512	14x14	**macc** 462422016	**activation** 100352
								comp 0	**param** 2359808
								add 0	
								div 0	
								exp 0	
31	relu5_3	ReLU	1	512	14x14	512	14x14	**macc** 0	**activation** 100352
								comp 100352	**param** 0

ID	name	type	batch	ch_in	dim_in	ch_out	dim_out		
								add 0	
								div 0	
								exp 0	
32	rpn_conv/3x3	Convolution	1	512	14x14	512	14x14	**macc** 462422016	**activation** 100352
								comp 0	**param** 2359808
								add 0	**mem_raw**
								div 0	
								exp 0	
33	rpn/output	implicit	1	512	14x14	512	14x14	**macc** 0	**activation** 100352
								comp 0	**param** 0
								add 0	
								div 0	
								exp 0	
34	rpn_relu/3x3	ReLU	1	512	14x14	512	14x14	**macc** 0	**activation** 100352
								comp 100352	**param** 0
								add 0	
								div 0	
								exp 0	
35	rpn_bbox_pred	Convolution	1	512	14x14	36	14x14	**macc** 3612672	**activation** 7056
								comp 0	**param** 18468
								add 0	
								div 0	
								exp 0	
36	rpn_cls_score	Convolution	1	512	14x14	18	14x14	**macc** 1806336	**activation** 3528
								comp 0	**param** 9234
								add 0	
								div 0	
								exp 0	
37	rpn_cls_score_reshape	Reshape	1	18	14x14	2	14x126	**macc** 0	**activation** 0
								comp 0	**param** 0
								add 0	
								div 0	
								exp 0	
38	rpn_cls_prob	Softmax	1	2	14x126	2	14x126	**macc** 0	**activation** 3528
								comp 0	**param** 0
								add 3528	
								div 3528	
								exp 3528	
39	rpn_cls_prob_reshape	Reshape	1	2	14x126	18	14x14	**macc** 0	**activation** 0
								comp 0	**param** 0
								add 0	
								div 0	
								exp 0	
40	im_info	implicit	?	?	?x?	?	?x?	**macc** 0	**activation** 0
								comp 0	**param** 0
								add 0	
								div 0	
								exp 0	
41	proposal	Python	1	18	14x14	5	1x1	**macc** 103812	**activation** 1500
								comp 3436230	**param** 0
								add 286740	
								div 44850	
								exp 3528	
42	scores	implicit	300	5	1x1	5	1x1	**macc** 0	**activation** 1500
								comp 0	**param** 0
								add 0	
								div 0	
								exp 0	
43	rois	implicit	300	5	1x1	5	1x1	**macc** 0	**activation** 1500
								comp 0	**param** 0
								add 0	
								div 0	
								exp 0	

Excel-compatible Analysis Results (experimental)