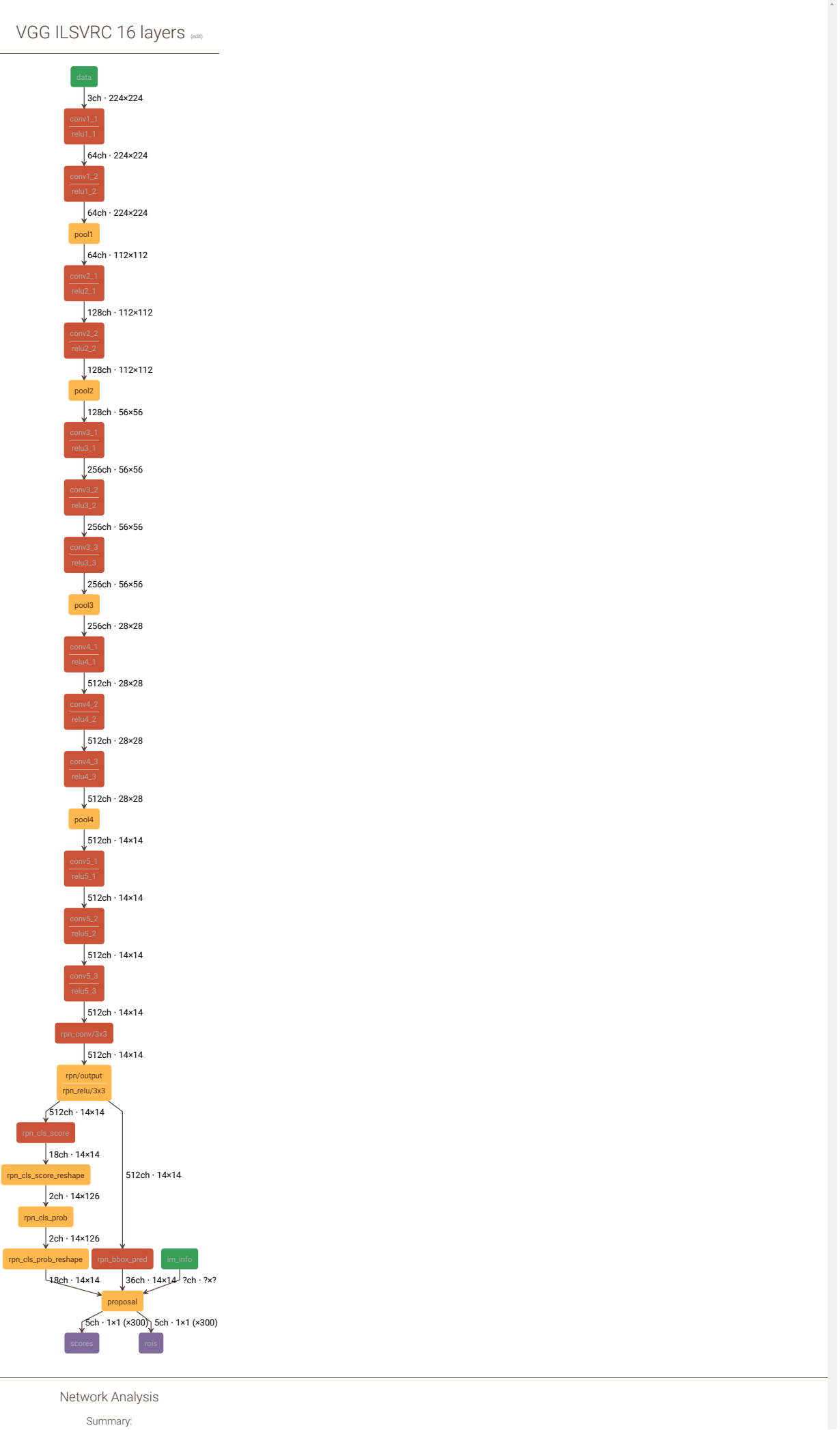


```
1 name: "VGG_ILSVRC_16_layers"
2
3 input: "data"
4 input_shape {
5   dim: 1
6   dim: 3
7   dim: 224
8   dim: 224
9 }
10
11 input: "im_info"
12 input_shape {
13   dim: 1
14   dim: 3
15 }
16
17 layer {
18   name: "conv1_1"
19   type: "Convolution"
20   bottom: "data"
21   top: "conv1_1"
22   convolution_param {
23     num_output: 64
24     pad: 1 kernel_size: 3
25   }
26 }
27 layer {
28   name: "relu1_1"
29   type: "ReLU"
30   bottom: "conv1_1"
31   top: "conv1_1"
32 }
33 layer {
34   name: "conv1_2"
35   type: "Convolution"
36   bottom: "conv1_1"
37   top: "conv1_2"
38   convolution_param {
39     num_output: 64
40     pad: 1 kernel_size: 3
41   }
42 }
43 layer {
44   name: "relu1_2"
45   type: "ReLU"
46   bottom: "conv1_2"
47   top: "conv1_2"
48 }
49 layer {
50   name: "pool1"
51   type: "Pooling"
52   bottom: "conv1_2"
53   top: "pool1"
54   pooling_param {
55     pool: MAX
56     kernel_size: 2 stride: 2
57   }
58 }
59 layer {
60   name: "conv2_1"
61   type: "Convolution"
62   bottom: "pool1"
63   top: "conv2_1"
64   convolution_param {
65     num_output: 128
66     pad: 1 kernel_size: 3
67   }
68 }
69 layer {
70   name: "relu2_1"
71   type: "ReLU"
72   bottom: "conv2_1"
73   top: "conv2_1"
74 }
75 layer {
76   name: "conv2_2"
77   type: "Convolution"
78   bottom: "conv2_1"
79   top: "conv2_2"
80   convolution_param {
81     num_output: 128
82     pad: 1 kernel_size: 3
83   }
84 }
85 layer {
86   name: "relu2_2"
87   type: "ReLU"
88   bottom: "conv2_2"
89   top: "conv2_2"
90 }
91 layer {
92   name: "pool2"
93   type: "Pooling"
94   bottom: "conv2_2"
95   top: "pool2"
96   pooling_param {
97     pool: MAX
98     kernel_size: 2 stride: 2
99   }
100 }
101 layer {
102   name: "conv3_1"
103   type: "Convolution"
104   bottom: "pool2"
105   top: "conv3_1"
106   convolution_param {
107     num_output: 256
108     pad: 1 kernel_size: 3
109   }
110 }
111 layer {
112   name: "relu3_1"
113   type: "ReLU"
114   bottom: "conv3_1"
115   top: "conv3_1"
116 }
117 layer {
118   name: "conv3_2"
119   type: "Convolution"
120   bottom: "conv3_1"
121   top: "conv3_2"
122   convolution_param {
123     num_output: 256
124     pad: 1 kernel_size: 3
125   }
126 }
127 layer {
128   name: "relu3_2"
129   type: "ReLU"
130   bottom: "conv3_2"
131   top: "conv3_2"
132 }
133 layer {
134   name: "conv3_3"
135   type: "Convolution"
136   bottom: "conv3_2"
137   top: "conv3_3"
138   convolution_param {
139     num_output: 256
140     pad: 1 kernel_size: 3
141   }
142 }
143 layer {
144   name: "relu3_3"
145   type: "ReLU"
146   bottom: "conv3_3"
147   top: "conv3_3"
148 }
149 layer {
150   name: "pool3"
151   type: "Pooling"
152   bottom: "conv3_3"
153   top: "pool3"
154   pooling_param {
155     pool: MAX
156     kernel_size: 2 stride: 2
157   }
158 }
159 layer {
160   name: "conv4_1"
161   type: "Convolution"
162   bottom: "pool3"
163   top: "conv4_1"
```



```
164 convolution_param {
165   num_output: 512
166   pad: 1 kernel_size: 3
167 }
168 }
169 layer {
170   name: "relu4_1"
171   type: "ReLU"
172   bottom: "conv4_1"
173   top: "conv4_1"
174 }
175 layer {
176   name: "conv4_2"
177   type: "Convolution"
178   bottom: "conv4_1"
179   top: "conv4_2"
180   convolution_param {
181     num_output: 512
182     pad: 1 kernel_size: 3
183   }
184 }
185 layer {
186   name: "relu4_2"
187   type: "ReLU"
188   bottom: "conv4_2"
189   top: "conv4_2"
190 }
191 layer {
192   name: "conv4_3"
193   type: "Convolution"
194   bottom: "conv4_2"
195   top: "conv4_3"
196   convolution_param {
197     num_output: 512
198     pad: 1 kernel_size: 3
199   }
200 }
201 layer {
202   name: "relu4_3"
203   type: "ReLU"
204   bottom: "conv4_3"
205   top: "conv4_3"
206 }
207 layer {
208   name: "pool4"
209   type: "Pooling"
210   bottom: "conv4_3"
211   top: "pool4"
212   pooling_param {
213     pool: MAX
214     kernel_size: 2 stride: 2
215   }
216 }
217 layer {
218   name: "conv5_1"
219   type: "Convolution"
220   bottom: "pool4"
221   top: "conv5_1"
222   convolution_param {
223     num_output: 512
224     pad: 1 kernel_size: 3
225   }
226 }
227 layer {
228   name: "relu5_1"
229   type: "ReLU"
230   bottom: "conv5_1"
231   top: "conv5_1"
232 }
233 layer {
234   name: "conv5_2"
235   type: "Convolution"
236   bottom: "conv5_1"
237   top: "conv5_2"
238   convolution_param {
239     num_output: 512
240     pad: 1 kernel_size: 3
241   }
242 }
243 layer {
244   name: "relu5_2"
245   type: "ReLU"
246   bottom: "conv5_2"
247   top: "conv5_2"
248 }
249 layer {
250   name: "conv5_3"
251   type: "Convolution"
252   bottom: "conv5_2"
253   top: "conv5_3"
254   convolution_param {
255     num_output: 512
256     pad: 1 kernel_size: 3
257   }
258 }
259 layer {
260   name: "relu5_3"
261   type: "ReLU"
262   bottom: "conv5_3"
263   top: "conv5_3"
264 }
265 }
266 #===== RPN =====
267
268 layer {
269   name: "rpn_conv/3x3"
270   type: "Convolution"
271   bottom: "conv5_3"
272   top: "rpn/output"
273   convolution_param {
274     num_output: 512
275     kernel_size: 3 pad: 1 stride: 1
276   }
277 }
278 layer {
279   name: "rpn_relu/3x3"
280   type: "ReLU"
281   bottom: "rpn/output"
282   top: "rpn/output"
283 }
284
285 layer {
286   name: "rpn_cls_score"
287   type: "Convolution"
288   bottom: "rpn/output"
289   top: "rpn_cls_score"
290   convolution_param {
291     num_output: 18 # 2(bg/fg) * 9(anchors)
292     kernel_size: 1 pad: 0 stride: 1
293   }
294 }
295 layer {
296   name: "rpn_bbox_pred"
297   type: "Convolution"
298   bottom: "rpn/output"
299   top: "rpn_bbox_pred"
300   convolution_param {
301     num_output: 36 # 4 * 9(anchors)
302     kernel_size: 1 pad: 0 stride: 1
303   }
304 }
305 layer {
306   bottom: "rpn_cls_score"
307   top: "rpn_cls_score_reshape"
308   name: "rpn_cls_score_reshape"
309   type: "Reshape"
310   reshape_param { shape { dim: 0 dim: 2 dim: -1 dim: 0 } }
311 }
312
313 #===== RoI Proposal =====
314
315 layer {
316   name: "rpn_cls_prob"
317   type: "Softmax"
318   bottom: "rpn_cls_score_reshape"
319   top: "rpn_cls_prob"
320 }
321 layer {
322   name: 'rpn_cls_prob_reshape'
323   type: 'Reshape'
324   bottom: 'rpn_cls_prob'
325   top: 'rpn_cls_prob_reshape'
326   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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 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	mac 3.61M	activation 7.06k param 18.47k
36	rpn_cls_score	Convolution		512	14x14	18	14x14	mac 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	mac 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								mac 15.81G comp 23.11M add 300.07k	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

```

adu	290.27k
div	48.38k
exp	7.06k

								div	0			
								exp	0			
16	conv3_3	Convolution	1	256	56x56	256	56x56	maccompadddivexp	184968806400000	activationparam	802816590080	
ID	name	type	batch	ch_in	dim_in	ch_out	dim_out	add	0	mem_raw		
								div	0			
								exp	0			
								maccompadddivexp	080281600000		activationparam	8028160
								maccompadddivexp	080281600000		activationparam	2007040
17	relu3_3	ReLU	1	256	56x56	256	56x56	maccompadddivexp	080281600000	activationparam	8028160	
18	pool3	Pooling	1	256	56x56	256	28x28	maccompadddivexp	080281600000	activationparam	2007040	
19	conv4_1	Convolution	1	256	28x28	512	28x28	maccompadddivexp	92484403200000	activationparam	4014081180160	
20	relu4_1	ReLU	1	512	28x28	512	28x28	maccompadddivexp	040140800000	activationparam	4014080	
21	conv4_2	Convolution	1	512	28x28	512	28x28	maccompadddivexp	184968806400000	activationparam	4014082359808	
22	relu4_2	ReLU	1	512	28x28	512	28x28	maccompadddivexp	040140800000	activationparam	4014080	
23	conv4_3	Convolution	1	512	28x28	512	28x28	maccompadddivexp	184968806400000	activationparam	4014082359808	
24	relu4_3	ReLU	1	512	28x28	512	28x28	maccompadddivexp	040140800000	activationparam	4014080	
25	pool4	Pooling	1	512	28x28	512	14x14	maccompadddivexp	040140800000	activationparam	1003520	
26	conv5_1	Convolution	1	512	14x14	512	14x14	maccompadddivexp	46242201600000	activationparam	1003522359808	
27	relu5_1	ReLU	1	512	14x14	512	14x14	maccompadddivexp	010035200000	activationparam	1003520	
28	conv5_2	Convolution	1	512	14x14	512	14x14	maccompadddivexp	46242201600000	activationparam	1003522359808	
29	relu5_2	ReLU	1	512	14x14	512	14x14	maccompadddivexp	010035200000	activationparam	1003520	
30	conv5_3	Convolution	1	512	14x14	512	14x14	maccompadddivexp	46242201600000	activationparam	1003522359808	
31	relu5_3	ReLU	1	512	14x14	512	14x14	maccompadddivexp	010035200000	activationparam	1003520	

								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
32	rpn_conv/3x3	Convolution	1	512	14x14	512	14x14	<div>macc462422016</div>	<div>activation100352</div>	
ID	name	type	batch	ch_in	dim_in	ch_out	dim_out	<div>comp0</div>	<div>param2359808</div>	
								<div>ops0</div>	<div>mem_raw</div>	
								<div>div0</div>		
								<div>exp0</div>		
33	rpn/output	implicit	1	512	14x14	512	14x14	<div>macc0</div>	<div>activation100352</div>	
								<div>comp0</div>	<div>param0</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
34	rpn_relu/3x3	ReLU	1	512	14x14	512	14x14	<div>macc0</div>	<div>activation100352</div>	
								<div>comp100352</div>	<div>param0</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
35	rpn_bbox_pred	Convolution	1	512	14x14	36	14x14	<div>macc3612672</div>	<div>activation7056</div>	
								<div>comp0</div>	<div>param18468</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
36	rpn_cls_score	Convolution	1	512	14x14	18	14x14	<div>macc1806336</div>	<div>activation3528</div>	
								<div>comp0</div>	<div>param9234</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
37	rpn_cls_score_reshape	Reshape	1	18	14x14	2	14x126	<div>macc0</div>	<div>activation0</div>	
								<div>comp0</div>	<div>param0</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
38	rpn_cls_prob	Softmax	1	2	14x126	2	14x126	<div>macc0</div>	<div>activation3528</div>	
								<div>comp0</div>	<div>param0</div>	
								<div>add3528</div>		
								<div>div3528</div>		
								<div>exp3528</div>		
39	rpn_cls_prob_reshape	Reshape	1	2	14x126	18	14x14	<div>macc0</div>	<div>activation0</div>	
								<div>comp0</div>	<div>param0</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
40	im_info	implicit	?	?	?x?	?	?x?	<div>macc0</div>	<div>activation0</div>	
								<div>comp0</div>	<div>param0</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
41	proposal	Python	1	18	14x14	5	1x1	<div>macc103812</div>	<div>activation1500</div>	
								<div>comp3436230</div>	<div>param0</div>	
								<div>add286740</div>		
								<div>div44850</div>		
								<div>exp3528</div>		
42	scores	implicit	300	5	1x1	5	1x1	<div>macc0</div>	<div>activation1500</div>	
								<div>comp0</div>	<div>param0</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		
43	rois	implicit	300	5	1x1	5	1x1	<div>macc0</div>	<div>activation1500</div>	
								<div>comp0</div>	<div>param0</div>	
								<div>add0</div>		
								<div>div0</div>		
								<div>exp0</div>		

Excel-compatible Analysis Results (experimental)