

```

1 name: "VGG_ILSVRC_16_layers"
2 layer {
3   name: 'input-data'
4   type: 'Python'
5   top: 'data'
6   top: 'im_info'
7   top: 'gt_boxes'
8   python_param {
9     module: 'roi_data_layer.layer'
10    layer: 'RoIDataLayer'
11    param_str: '"num_classes": 2'
12  }
13 }
14
15 layer {
16   name: "conv1_1"
17   type: "Convolution"
18   bottom: "data"
19   top: "conv1_1"
20   param {
21     lr_mult: 0
22     decay_mult: 0
23   }
24   param {
25     lr_mult: 0
26     decay_mult: 0
27   }
28   convolution_param {
29     num_output: 64
30     pad: 1
31     kernel_size: 3
32   }
33 }
34 layer {
35   name: "relu1_1"
36   type: "ReLU"
37   bottom: "conv1_1"
38   top: "conv1_1"
39 }
40 layer {
41   name: "conv1_2"
42   type: "Convolution"
43   bottom: "conv1_1"
44   top: "conv1_2"
45   param {
46     lr_mult: 0
47     decay_mult: 0
48   }
49   param {
50     lr_mult: 0
51     decay_mult: 0
52   }
53   convolution_param {
54     num_output: 64
55     pad: 1
56     kernel_size: 3
57   }
58 }
59 layer {
60   name: "relu2_1"
61   type: "ReLU"
62   bottom: "conv1_2"
63   top: "conv1_2"
64 }
65 layer {
66   name: "pool1"
67   type: "Pooling"
68   bottom: "conv1_2"
69   top: "pool1"
70   pooling_param {
71     pool: MAX
72     kernel_size: 2
73     stride: 2
74   }
75 }
76 layer {
77   name: "conv2_1"
78   type: "Convolution"
79   bottom: "pool1"
80   top: "conv2_1"
81   param {
82     lr_mult: 0
83     decay_mult: 0
84   }
85   param {
86     lr_mult: 0
87     decay_mult: 0
88   }
89   convolution_param {
90     num_output: 128
91     pad: 1
92     kernel_size: 3
93   }
94 }
95 layer {
96   name: "relu2_1"
97   type: "ReLU"
98   bottom: "conv2_1"
99   top: "conv2_1"
100 }
101 layer {
102   name: "conv2_2"
103   type: "Convolution"
104   bottom: "conv2_1"
105   top: "conv2_2"
106   param {
107     lr_mult: 0
108     decay_mult: 0
109   }
110   param {
111     lr_mult: 0
112     decay_mult: 0
113   }
114   convolution_param {
115     num_output: 128
116     pad: 1
117     kernel_size: 3
118   }
119 }
120 layer {
121   name: "relu2_2"
122   type: "ReLU"
123   bottom: "conv2_2"
124   top: "conv2_2"
125 }
126 layer {
127   name: "pool2"
128   type: "Pooling"
129   bottom: "conv2_2"
130   top: "pool2"
131   pooling_param {
132     pool: MAX
133     kernel_size: 2
134     stride: 2
135   }
136 }
137 layer {
138   name: "conv3_1"
139   type: "Convolution"
140   bottom: "pool2"
141   top: "conv3_1"
142   param {
143     lr_mult: 1
144   }
145   param {
146     lr_mult: 2
147   }
148   convolution_param {
149     num_output: 256
150     pad: 1
151     kernel_size: 3
152   }
153 }
154 layer {
155   name: "relu3_1"
156   type: "ReLU"
157   bottom: "conv3_1"
158   top: "conv3_1"
159 }
160 layer {
161   name: "conv3_2"
162   type: "Convolution"
163   bottom: "conv3_1"

```

Diagram illustrating the VGG ILSVRC 16 layers architecture, showing the flow of data through various layers and the resulting outputs.

Input Data: 0ch · 0x0

Initial Processing:

- data (0ch · 0x0)
- conv1_1, relu1_1 (64ch · 0x0)
- conv1_2, relu1_2 (64ch · 0x0)
- pool1 (64ch · 0x0)
- conv2_1, relu2_1 (128ch · 0x0)
- conv2_2, relu2_2 (128ch · 0x0)
- pool2 (128ch · 0x0)
- conv3_1, relu3_1 (256ch · 0x0)
- conv3_2, relu3_2 (256ch · 0x0)
- conv3_3, relu3_3 (256ch · 0x0)
- pool3 (256ch · 0x0)
- conv4_1, relu4_1 (512ch · 0x0)
- conv4_2, relu4_2 (512ch · 0x0)
- conv4_3, relu4_3 (512ch · 0x0)
- pool4 (512ch · 0x0)
- conv5_1, relu5_1 (512ch · 0x0)
- conv5_2, relu5_2 (512ch · 0x0)
- conv5_3, relu5_3 (512ch · 0x0)

Feature Extraction and Loss Calculation:

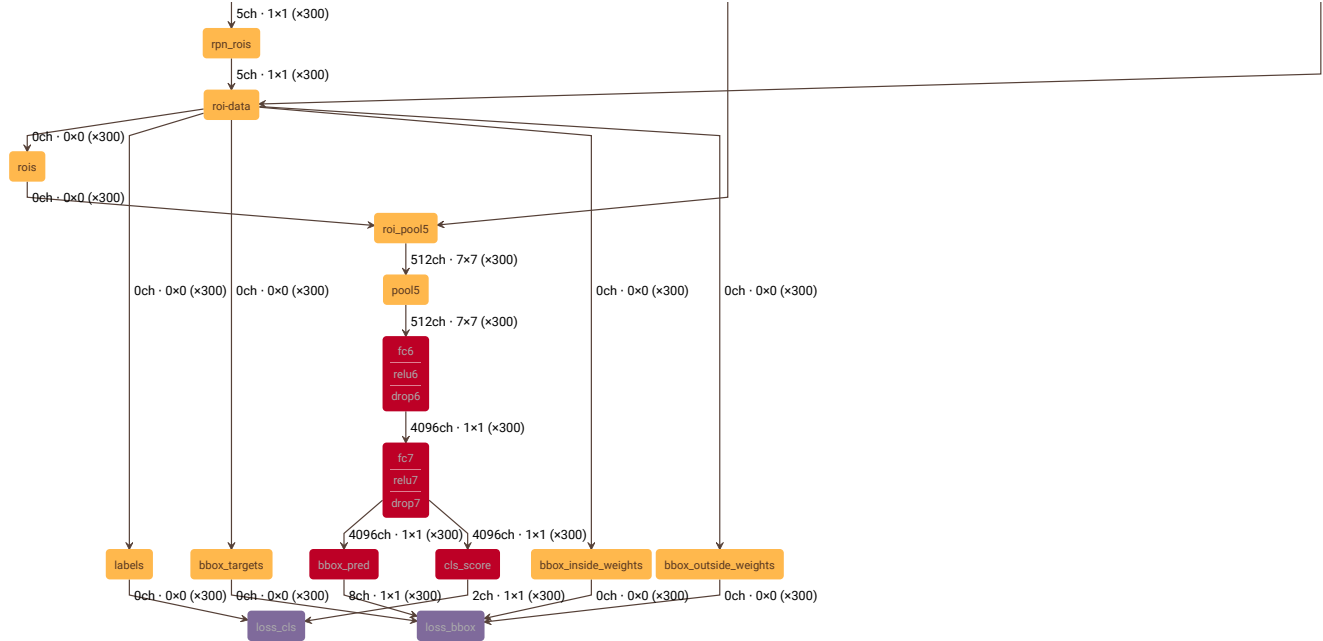
- rpn_conv3x3 (512ch · 0x0) → rpn_output, rpn_relu/3x3 (512ch · 0x0)
- rpn_cls_score (512ch · 0x0) → rpn_cls_score_reshape (18ch · 0x0) → rpn_cls_prob (2ch · 0xNaN) → rpn_cls_prob_reshape (18ch · 0xNaN)
- rpn_loss_cls (2ch · 0xNaN)
- rpn_loss_box (2ch · 0xNaN)
- rpn_loss (2ch · 0xNaN)
- proposal (36ch · 0x0)

Final Outputs:

- im_info (0ch · 0x0)
- gt_boxes (0ch · 0x0)
- rpn_data (0ch · 0x0)
- rpn_labels (0ch · 0x0)
- rpn_bbox_targets (0ch · 0x0)
- rpn_bbox_inside_weights (0ch · 0x0)
- rpn_bbox_outside_weights (0ch · 0x0)
- rpn_loss_box (0ch · 0x0)

```
164 top: "conv3_2"
165 param {
166   lr_mult: 1
167 }
168 param {
169   lr_mult: 2
170 }
171 convolution_param {
172   num_output: 256
173   pad: 1
174   kernel_size: 3
175 }
176 }
177 layer {
178   name: "relu3_2"
179   type: "ReLU"
180   bottom: "conv3_2"
181   top: "conv3_2"
182 }
183 layer {
184   name: "conv3_3"
185   type: "Convolution"
186   bottom: "conv3_2"
187   top: "conv3_3"
188   param {
189     lr_mult: 1
190   }
191   param {
192     lr_mult: 2
193   }
194   convolution_param {
195     num_output: 256
196     pad: 1
197     kernel_size: 3
198   }
199 }
200 layer {
201   name: "relu3_3"
202   type: "ReLU"
203   bottom: "conv3_3"
204   top: "conv3_3"
205 }
206 layer {
207   name: "pool3"
208   type: "Pooling"
209   bottom: "conv3_3"
210   top: "pool3"
211   pooling_param {
212     pool: MAX
213     kernel_size: 2
214     stride: 2
215   }
216 }
217 layer {
218   name: "conv4_1"
219   type: "Convolution"
220   bottom: "pool3"
221   top: "conv4_1"
222   param {
223     lr_mult: 1
224   }
225   param {
226     lr_mult: 2
227   }
228   convolution_param {
229     num_output: 512
230     pad: 1
231     kernel_size: 3
232   }
233 }
234 layer {
235   name: "relu4_1"
236   type: "ReLU"
237   bottom: "conv4_1"
238   top: "conv4_1"
239 }
240 layer {
241   name: "conv4_2"
242   type: "Convolution"
243   bottom: "conv4_1"
244   top: "conv4_2"
245   param {
246     lr_mult: 1
247   }
248   param {
249     lr_mult: 2
250   }
251   convolution_param {
252     num_output: 512
253     pad: 1
254     kernel_size: 3
255   }
256 }
257 layer {
258   name: "relu4_2"
259   type: "ReLU"
260   bottom: "conv4_2"
261   top: "conv4_2"
262 }
263 layer {
264   name: "conv4_3"
265   type: "Convolution"
266   bottom: "conv4_2"
267   top: "conv4_3"
268   param {
269     lr_mult: 1
270   }
271   param {
272     lr_mult: 2
273   }
274   convolution_param {
275     num_output: 512
276     pad: 1
277     kernel_size: 3
278   }
279 }
280 layer {
281   name: "relu4_3"
282   type: "ReLU"
283   bottom: "conv4_3"
284   top: "conv4_3"
285 }
286 layer {
287   name: "pool4"
288   type: "Pooling"
289   bottom: "conv4_3"
290   top: "pool4"
291   pooling_param {
292     pool: MAX
293     kernel_size: 2
294     stride: 2
295   }
296 }
297 layer {
298   name: "conv5_1"
299   type: "Convolution"
300   bottom: "pool4"
301   top: "conv5_1"
302   param {
303     lr_mult: 1
304   }
305   param {
306     lr_mult: 2
307   }
308   convolution_param {
309     num_output: 512
310     pad: 1
311     kernel_size: 3
312   }
313 }
314 layer {
315   name: "relu5_1"
316   type: "ReLU"
317   bottom: "conv5_1"
318   top: "conv5_1"
319 }
320 layer {
321   name: "conv5_2"
322   type: "Convolution"
323   bottom: "conv5_1"
324   top: "conv5_2"
325   param {
326     lr_mult: 1
```

VGG ILSVRC 16 layers — Netscope CNN Analyzer



Network Analysis

Summary:

ID	name	type	batch	ch_in	dim_in	ch_out	dim_out	ops	mem
1	input-data	Python			undefinedxundefined	0	0x0		
2	data	implicit		0	0x0	0	0x0		
3	conv1_1	Convolution		0	0x0	64	0x0		param 64
4	relu1_1	ReLU		64	0x0	64	0x0		
5	conv1_2	Convolution		64	0x0	64	0x0		param 36.93k
6	relu1_2	ReLU		64	0x0	64	0x0		
7	pool1	Pooling		64	0x0	64	0x0		
8	conv2_1	Convolution		64	0x0	128	0x0		param 73.86k
9	relu2_1	ReLU		128	0x0	128	0x0		
10	conv2_2	Convolution		128	0x0	128	0x0		param 147.58k
11	relu2_2	ReLU		128	0x0	128	0x0		
12	pool2	Pooling		128	0x0	128	0x0		
13	conv3_1	Convolution		128	0x0	256	0x0		param 295.17k
14	relu3_1	ReLU		256	0x0	256	0x0		
15	conv3_2	Convolution		256	0x0	256	0x0		param 590.08k
16	relu3_2	ReLU		256	0x0	256	0x0		
17	conv3_3	Convolution		256	0x0	256	0x0		param 590.08k
18	relu3_3	ReLU		256	0x0	256	0x0		
19	pool3	Pooling		256	0x0	256	0x0		
20	conv4_1	Convolution		256	0x0	512	0x0		param 1.18M
21	relu4_1	ReLU		512	0x0	512	0x0		
22	conv4_2	Convolution		512	0x0	512	0x0		param 2.36M
23	relu4_2	ReLU		512	0x0	512	0x0		
24	conv4_3	Convolution		512	0x0	512	0x0		param 2.36M
25	relu4_3	ReLU		512	0x0	512	0x0		
26	pool4	Pooling		512	0x0	512	0x0		
27	conv5_1	Convolution		512	0x0	512	0x0		param 2.36M
28	relu5_1	ReLU		512	0x0	512	0x0		
29	conv5_2	Convolution		512	0x0	512	0x0		param 2.36M
30	relu5_2	ReLU		512	0x0	512	0x0		
31	conv5_3	Convolution		512	0x0	512	0x0		param 2.36M
32	relu5_3	ReLU		512	0x0	512	0x0		
33	rpn_conv/3x3	Convolution		512	0x0	512	0x0		param 2.36M
34	im_info	implicit		0	0x0	0	0x0		
35	gt_boxes	implicit		0	0x0	0	0x0		
36	rpn/output	implicit		512	0x0	512	0x0		
37	rpn_relu/3x3	ReLU		512	0x0	512	0x0		
38	rpn_bbox_pred	Convolution		512	0x0	36	0x0		param 18.47k
39	rpn_cls_score	Convolution		512	0x0	18	0x0		param 9.23k
40	rpn-data	Python		18	0x0	0	0x0		
41	rpn_cls_score_reshape	Reshape		18	0x0	2	0xNaN		
42	rpn_cls_prob	Softmax		2	0xNaN	2	0xNaN		
43	rpn_cls_prob_reshape	Reshape		2	0xNaN	18	0xNaN		
44	proposal	Python		18	0xNaN	5	1x1	div 44.85k	activation 1.5k
45	rpn_labels	implicit		0	0x0	0	0x0		
46	rpn_loss_cls	SoftmaxWithLoss		2	0xNaN	2	0xNaN		
47	rpn_bbox_targets	implicit		0	0x0	0	0x0		
48	rpn_bbox_inside_weights	implicit		0	0x0	0	0x0		

```
327 }
328 param {
329   lr_mult: 2
330 }
331 convolution_param {
332   num_output: 512
333   pad: 1
334   kernel_size: 3
335 }
336 }
337 layer {
338   name: "relu5_2"
339   type: "ReLU"
340   bottom: "conv5_2"
341   top: "conv5_2"
342 }
343 layer {
344   name: "conv5_3"
345   type: "Convolution"
346   bottom: "conv5_2"
347   top: "conv5_3"
348   param {
349     lr_mult: 1
350   }
351   param {
352     lr_mult: 2
353   }
354   convolution_param {
355     num_output: 512
356     pad: 1
357     kernel_size: 3
358   }
359 }
360 layer {
361   name: "relu5_3"
362   type: "ReLU"
363   bottom: "conv5_3"
364   top: "conv5_3"
365 }
366 }
367 #***** RPN *****
368
369 layer {
370   name: "rpn_conv/3x3"
371   type: "Convolution"
372   bottom: "conv5_3"
373   top: "rpn/output"
374   param { lr_mult: 1.0 }
375   param { lr_mult: 2.0 }
376   convolution_param {
377     num_output: 512
378     kernel_size: 3 pad: 1 stride: 1
379     weight_filler { type: "gaussian" std: 0.01 }
380     bias_filler { type: "constant" value: 0 }
381   }
382 }
383 layer {
384   name: "rpn_relu/3x3"
385   type: "ReLU"
386   bottom: "rpn/output"
387   top: "rpn/output"
388 }
389
390 layer {
391   name: "rpn_cls_score"
392   type: "Convolution"
393   bottom: "rpn/output"
394   top: "rpn_cls_score"
395   param { lr_mult: 1.0 }
396   param { lr_mult: 2.0 }
397   convolution_param {
398     num_output: 18 # 2(bg/fg) * 9(anchors)
399     kernel_size: 1 pad: 0 stride: 1
400     weight_filler { type: "gaussian" std: 0.01 }
401     bias_filler { type: "constant" value: 0 }
402   }
403 }
404
405 layer {
406   name: "rpn_bbox_pred"
407   type: "Convolution"
408   bottom: "rpn/output"
409   top: "rpn_bbox_pred"
410   param { lr_mult: 1.0 }
411   param { lr_mult: 2.0 }
412   convolution_param {
413     num_output: 36 # 4 * 9(anchors)
414     kernel_size: 1 pad: 0 stride: 1
415     weight_filler { type: "gaussian" std: 0.01 }
416     bias_filler { type: "constant" value: 0 }
417   }
418 }
419
420 layer {
421   bottom: "rpn_cls_score"
422   top: "rpn_cls_score_reshape"
423   name: "rpn_cls_score_reshape"
424   type: "Reshape"
425   reshape_param { shape { dim: 0 dim: 2 dim: -1 dim: 0 } }
426 }
427
428 layer {
429   name: 'rpn-data'
430   type: 'Python'
431   bottom: 'rpn_cls_score'
432   bottom: 'gt_boxes'
433   bottom: 'im_info'
434   bottom: 'data'
435   top: 'rpn_labels'
436   top: 'rpn_bbox_targets'
437   top: 'rpn_bbox_inside_weights'
438   top: 'rpn_bbox_outside_weights'
439   python_param {
440     module: 'rpn.anchor_target_layer'
441     layer: 'AnchorTargetLayer'
442     param_str: "'feat_stride': 16"
443   }
444 }
445
446 layer {
447   name: "rpn_loss_cls"
448   type: "SoftmaxWithLoss"
449   bottom: "rpn_cls_score_reshape"
450   bottom: "rpn_labels"
451   propagate_down: 1
452   propagate_down: 0
453   top: "rpn_cls_loss"
454   loss_weight: 1
455   loss_param {
456     ignore_label: -1
457     normalize: true
458   }
459 }
460
461 layer {
462   name: "rpn_loss_bbox"
463   type: "SmoothL1Loss"
464   bottom: "rpn_bbox_pred"
465   bottom: "rpn_bbox_targets"
466   bottom: "rpn_bbox_inside_weights"
467   bottom: "rpn_bbox_outside_weights"
468   top: "rpn_loss_bbox"
469   loss_weight: 1
470   smooth_l1_loss_param { sigma: 3.0 }
471 }
472
473 #***** RoI Proposal *****
474
475 layer {
476   name: "rpn_cls_prob"
477   type: "Softmax"
478   bottom: "rpn_cls_score_reshape"
479   top: "rpn_cls_prob"
480 }
481
482 layer {
483   name: 'rpn_cls_prob_reshape'
484   type: 'Reshape'
485   bottom: 'rpn_cls_prob'
486   top: 'rpn_cls_prob_reshape'
487   reshape_param { shape { dim: 0 dim: 18 dim: -1 dim: 0 } }
488 }
489
```

49	rpn_bbox_outside_weights	implicit	0	0x0	0	0x0			
50	rpn_loss_bbox	SmoothL1Loss	36	0x0	0	0x0			
51	rpn_cls_loss	implicit	2	0xNaN	2	0xNaN			
52	rpn_rois	implicit	5	1x1	5	1x1			activation 1.5k
53	roi-data	Python	5	1x1	0	0x0			
54	rois	implicit	0	0x0	0	0x0			
55	roi_pool5	ROI Pooling	512	0x0	512	7x7	maco 300 add 300 div 300		activation 7.53M
56	labels	implicit	0	0x0	0	0x0			
57	bbox_targets	implicit	0	0x0	0	0x0			
58	bbox_inside_weights	implicit	0	0x0	0	0x0			
59	bbox_outside_weights	implicit	0	0x0	0	0x0			
60	pool5	implicit	512	7x7	512	7x7			activation 7.53M
61	fc6	InnerProduct	512	7x7	4096	1x1	maco 30.83G param 102.76M		activation 1.23M
62	relu6	ReLU	4096	1x1	4096	1x1	comp 1.23M		activation 1.23M
63	drop6	Dropout	4096	1x1	4096	1x1	comp 1.23M		activation 1.23M
64	fc7	InnerProduct	4096	1x1	4096	1x1	maco 5.03G param 16.78M		activation 1.23M
65	relu7	ReLU	4096	1x1	4096	1x1	comp 1.23M		activation 1.23M
66	drop7	Dropout	4096	1x1	4096	1x1	comp 1.23M		activation 1.23M
67	bbox_pred	InnerProduct	4096	1x1	8	1x1	maco 9.83M param 32.78k		activation 2.4k
68	loss_bbox	SmoothL1Loss	8	1x1	0	0x0			
69	cls_score	InnerProduct	4096	1x1	2	1x1	maco 2.46M param 8.19k		activation 600
ID	name	type	batch	ch_in	dim_in	ch_out	dim_out	ops	param mem
70	loss_cls	SoftmaxWithLoss	2	1x1	2	1x1	add 600 div 600 exp 600		activation 600
TOTAL								maco NaN comp NaN add NaN div NaN exp NaN	activation NaN param 136.69M

Details:

	name	type	batch	ch_in	dim_in	ch_out	dim_out	ops_raw	mem_raw
1	input-data	Python			undefined	undefined	0	0x0	<div>macco 0</div> <div>comp 0</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation 0</div> <div>param 0</div>
2	data	implicit	?	0	0x0		0	0x0	<div>macco 0</div> <div>comp 0</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation 0</div> <div>param 0</div>
3	conv1_1	Convolution	?	0	0x0		64	0x0	<div>macco NaN</div> <div>comp 0</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation NaN</div> <div>param 64</div>
4	relu1_1	ReLU	?	64	0x0		64	0x0	<div>macco 0</div> <div>comp NaN</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation NaN</div> <div>param 0</div>
5	conv1_2	Convolution	?	64	0x0		64	0x0	<div>macco NaN</div> <div>comp 0</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation NaN</div> <div>param 36928</div>
6	relu1_2	ReLU	?	64	0x0		64	0x0	<div>macco 0</div> <div>comp NaN</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation NaN</div> <div>param 0</div>
7	pool1	Pooling	?	64	0x0		64	0x0	<div>macco 0</div> <div>comp NaN</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation NaN</div> <div>param 0</div>
8	conv2_1	Convolution	?	64	0x0		128	0x0	<div>macco NaN</div> <div>comp 0</div> <div>add 0</div> <div>div 0</div> <div>exp 0</div> <div>activation NaN</div> <div>param 73856</div>

```
490 layer {
491   name: 'proposal'
492   type: 'Python'
493   bottom: 'rpn_cls_prob_reshape'
494   bottom: 'rpn_bbox_pred'
495   bottom: 'im_info'
496   top: 'rpn_rois'
497   # top: 'rpn_scores'
498   python_param {
499     module: 'rpn.proposal_layer'
500     layer: 'ProposalLayer'
501     param_str: "'feat_stride': 16"
502   }
503 }
504
505 #layer {
506 #   name: 'debug-data'
507 #   type: 'Python'
508 #   bottom: 'data'
509 #   bottom: 'rpn_rois'
510 #   bottom: 'rpn_scores'
511 #   python_param {
512 #     module: 'rpn.debug_layer'
513 #     layer: 'RPNDebugLayer'
514 #   }
515 #}
516
517 layer {
518   name: 'roi-data'
519   type: 'Python'
520   bottom: 'rpn_rois'
521   bottom: 'gt_boxes'
522   top: 'rois'
523   top: 'labels'
524   top: 'bbox_targets'
525   top: 'bbox_inside_weights'
526   top: 'bbox_outside_weights'
527   python_param {
528     module: 'rpn.proposal_target_layer'
529     layer: 'ProposalTargetLayer'
530     param_str: "'num_classes': 2"
531   }
532 }
533
534 #===== RCNN =====
535
536 layer {
537   name: "roi_pool5"
538   type: "ROIPooling"
539   bottom: "conv5_3"
540   bottom: "rois"
541   top: "pool5"
542   roi_pooling_param {
543     pooled_w: 7
544     pooled_h: 7
545     spatial_scale: 0.0625 # 1/16
546   }
547 }
548 layer {
549   name: "fc6"
550   type: "InnerProduct"
551   bottom: "pool5"
552   top: "fc6"
553   param {
554     lr_mult: 1
555   }
556   param {
557     lr_mult: 2
558   }
559   inner_product_param {
560     num_output: 4096
561   }
562 }
563 layer {
564   name: "relu6"
565   type: "ReLU"
566   bottom: "fc6"
567   top: "fc6"
568 }
569 layer {
570   name: "drop6"
571   type: "Dropout"
572   bottom: "fc6"
573   top: "fc6"
574   dropout_param {
575     dropout_ratio: 0.5
576   }
577 }
578 layer {
579   name: "fc7"
580   type: "InnerProduct"
581   bottom: "fc6"
582   top: "fc7"
583   param {
584     lr_mult: 1
585   }
586   param {
587     lr_mult: 2
588   }
589   inner_product_param {
590     num_output: 4096
591   }
592 }
593 layer {
594   name: "relu7"
595   type: "ReLU"
596   bottom: "fc7"
597   top: "fc7"
598 }
599 layer {
600   name: "drop7"
601   type: "Dropout"
602   bottom: "fc7"
603   top: "fc7"
604   dropout_param {
605     dropout_ratio: 0.5
606   }
607 }
608 layer {
609   name: "cls_score"
610   type: "InnerProduct"
611   bottom: "fc7"
612   top: "cls_score"
613   param {
614     lr_mult: 1
615   }
616   param {
617     lr_mult: 2
618   }
619   inner_product_param {
620     num_output: 2
621   }
622   weight_filler {
623     type: "gaussian"
624     std: 0.01
625   }
626   bias_filler {
627     type: "constant"
628     value: 0
629   }
630 }
631 layer {
632   name: "bbox_pred"
633   type: "InnerProduct"
634   bottom: "fc7"
635   top: "bbox_pred"
636   param {
637     lr_mult: 1
638   }
639   param {
640     lr_mult: 2
641   }
642   inner_product_param {
643     num_output: 8
644   }
645   weight_filler {
646     type: "gaussian"
647     std: 0.001
648   }
649   bias_filler {
650     type: "constant"
651     value: 0
652   }
653 }
```

								uiv	0		
								exp	0		
9	relu2_1	ReLU	?	128	0x0	128	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
10	conv2_2	Convolution	?	128	0x0	128	0x0	mac	NaN	activation	NaN
								comp	0	param	147584
								add	0		
								div	0		
								exp	0		
11	relu2_2	ReLU	?	128	0x0	128	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
12	pool2	Pooling	?	128	0x0	128	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
13	conv3_1	Convolution	?	128	0x0	256	0x0	mac	NaN	activation	NaN
								comp	0	param	295168
								add	0		
								div	0		
								exp	0		
14	relu3_1	ReLU	?	256	0x0	256	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
15	conv3_2	Convolution	?	256	0x0	256	0x0	mac	NaN	activation	NaN
								comp	0	param	590080
								add	0		
								div	0		
								exp	0		
16	relu3_2	ReLU	?	256	0x0	256	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
ID	name	type	batch	ch_in	dlim_in	ch_out	dlim_out	add	0	mem_raw	
								uiv	0		
								exp	0		
17	conv3_3	Convolution	?	256	0x0	256	0x0	mac	NaN	activation	NaN
								comp	0	param	590080
								add	0		
								div	0		
								exp	0		
18	relu3_3	ReLU	?	256	0x0	256	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
19	pool3	Pooling	?	256	0x0	256	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
20	conv4_1	Convolution	?	256	0x0	512	0x0	mac	NaN	activation	NaN
								comp	0	param	1180160
								add	0		
								div	0		
								exp	0		
21	relu4_1	ReLU	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
22	conv4_2	Convolution	?	512	0x0	512	0x0	mac	NaN	activation	NaN
								comp	0	param	2359808
								add	0		
								div	0		
								exp	0		
23	relu4_2	ReLU	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
24	conv4_3	Convolution	?	512	0x0	512	0x0	mac	NaN	activation	NaN
								comp	0	param	2359808
								add	0		

```
653 }
654 layer {
655   name: "loss_cls"
656   type: "SoftmaxWithLoss"
657   bottom: "cls_score"
658   bottom: "labels"
659   propagate_down: 1
660   propagate_down: 0
661   top: "loss_cls"
662   loss_weight: 1
663 }
664 layer {
665   name: "loss_bbox"
666   type: "SmoothL1Loss"
667   bottom: "bbox_pred"
668   bottom: "bbox_targets"
669   bottom: "bbox_inside_weights"
670   bottom: "bbox_outside_weights"
671   top: "loss_bbox"
672   loss_weight: 1
673 }
674
```

								---	-		
								div	0		
								exp	0		
25	relu4_3	ReLU	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
26	pool4	Pooling	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
27	conv5_1	Convolution	?	512	0x0	512	0x0	mac	NaN	activation	NaN
								comp	0	param	2359808
								add	0		
								div	0		
								exp	0		
28	relu5_1	ReLU	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
29	conv5_2	Convolution	?	512	0x0	512	0x0	mac	NaN	activation	NaN
								comp	0	param	2359808
								add	0		
								div	0		
								exp	0		
30	relu5_2	ReLU	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
31	conv5_3	Convolution	?	512	0x0	512	0x0	mac	NaN	activation	NaN
								comp	0	param	2359808
								add	0		
								div	0		
								exp	0		
32	relu5_3	ReLU	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
33	rpn_conv/3x3	Convolution	?	512	0x0	512	0x0	mac	NaN	activation	NaN
								comp	0	param	2359808
								add	0		
								div	0		
								exp	0		
34	im_info	implicit	?	0	0x0	0	0x0	mac	0	activation	0
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
35	gt_boxes	implicit	?	0	0x0	0	0x0	mac	0	activation	0
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
36	rpn/output	implicit	?	512	0x0	512	0x0	mac	0	activation	0
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
37	rpn_relu/3x3	ReLU	?	512	0x0	512	0x0	mac	0	activation	NaN
								comp	NaN	param	0
								add	0		
								div	0		
								exp	0		
38	rpn_bbox_pred	Convolution	?	512	0x0	36	0x0	mac	NaN	activation	NaN
								comp	0	param	18468
								add	0		
								div	0		
								exp	0		
39	rpn_cls_score	Convolution	?	512	0x0	18	0x0	mac	NaN	activation	NaN
								comp	0	param	9234
								add	0		
								div	0		
								exp	0		
40	rpn-data	Python	?	18	0x0	0	0x0	mac	0	activation	0
								comp	0	param	0

								<div>add0</div>	
								<div>div0</div>	
								<div>exp0</div>	
41	rpn_cls_score_reshape	Reshape	?	18	0x0	2	0xNaN	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>add0</div>	
								<div>div0</div>	
								<div>exp0</div>	
42	rpn_cls_prob	Softmax	?	2	0xNaN	2	0xNaN	<div>maccompadddivexp00NaNNaNNaN</div>	<div>activationNaN</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
43	rpn_cls_prob_reshape	Reshape	?	2	0xNaN	18	0xNaN	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexpNaNNaNNaN</div>	
44	proposal	Python	?	18	0xNaN	5	1x1	<div>maccompadddivexpNaNNaN44850NaN</div>	<div>activation1500</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
45	rpn_labels	implicit	?	0	0x0	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
46	rpn_loss_cls	SoftmaxWithLoss	?	2	0xNaN	2	0xNaN	<div>maccompadddivexp00NaNNaNNaN</div>	<div>activationNaN</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
47	rpn_bbox_targets	implicit	?	0	0x0	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
48	rpn_bbox_inside_weights	implicit	?	0	0x0	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
49	rpn_bbox_outside_weights	implicit	?	0	0x0	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
50	rpn_loss_bbox	SmoothL1Loss	?	36	0x0	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
51	rpn_cls_loss	implicit	?	2	0xNaN	2	0xNaN	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
52	rpn_rois	implicit	300	5	1x1	5	1x1	<div>maccompadddivexp00000</div>	<div>activation1500</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
53	roi-data	Python	300	5	1x1	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
54	rois	implicit	300	0	0x0	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div> <div>param0</div>
								<div>maccompadddivexp30003003000</div>	<div>activation7526400</div> <div>param0</div>
55	roi_pool5	ROI Pooling	300	512	0x0	512	7x7	<div>maccompadddivexp30003003000</div>	<div>activation7526400</div> <div>param0</div>
								<div>maccompadddivexp00000</div>	
56	labels	implicit	300	0	0x0	0	0x0	<div>maccompadddivexp00000</div>	<div>activation0</div>

								comp	0	param	0
								add	0		
								div	0		
								exp	0		
57	bbox_targets	implicit	300	0	0x0	0	0x0	mac	0	activation	0
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
58	bbox_inside_weights	implicit	300	0	0x0	0	0x0	mac	0	activation	0
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
59	bbox_outside_weights	implicit	300	0	0x0	0	0x0	mac	0	activation	0
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
60	pool5	implicit	300	512	7x7	512	7x7	mac	0	activation	7526400
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
61	fc6	InnerProduct	300	512	7x7	4096	1x1	mac	30828134400	activation	1228800
								comp	0	param	102764544
								add	0		
								div	0		
								exp	0		
62	relu6	ReLU	300	4096	1x1	4096	1x1	mac	0	activation	1228800
								comp	1228800	param	0
								add	0		
								div	0		
								exp	0		
63	drop6	Dropout	300	4096	1x1	4096	1x1	mac	0	activation	1228800
								comp	1228800	param	0
								add	0		
								div	0		
								exp	0		
64	fc7	InnerProduct	300	4096	1x1	4096	1x1	mac	5033164800	activation	1228800
								comp	0	param	16781312
								add	0		
								div	0		
								exp	0		
65	relu7	ReLU	300	4096	1x1	4096	1x1	mac	0	activation	1228800
								comp	1228800	param	0
								add	0		
								div	0		
								exp	0		
66	drop7	Dropout	300	4096	1x1	4096	1x1	mac	0	activation	1228800
								comp	1228800	param	0
								add	0		
								div	0		
								exp	0		
67	bbox_pred	InnerProduct	300	4096	1x1	8	1x1	mac	9830400	activation	2400
								comp	0	param	32776
								add	0		
								div	0		
								exp	0		
68	loss_bbox	SmoothL1Loss	300	8	1x1	0	0x0	mac	0	activation	0
								comp	0	param	0
								add	0		
								div	0		
								exp	0		
69	cls_score	InnerProduct	300	4096	1x1	2	1x1	mac	2457600	activation	600
								comp	0	param	8194
								add	0		
								div	0		
								exp	0		
70	loss_cls	SoftmaxWithLoss	300	2	1x1	2	1x1	mac	0	activation	600
								comp	0	param	0
								add	600		
								div	600		
								exp	600		