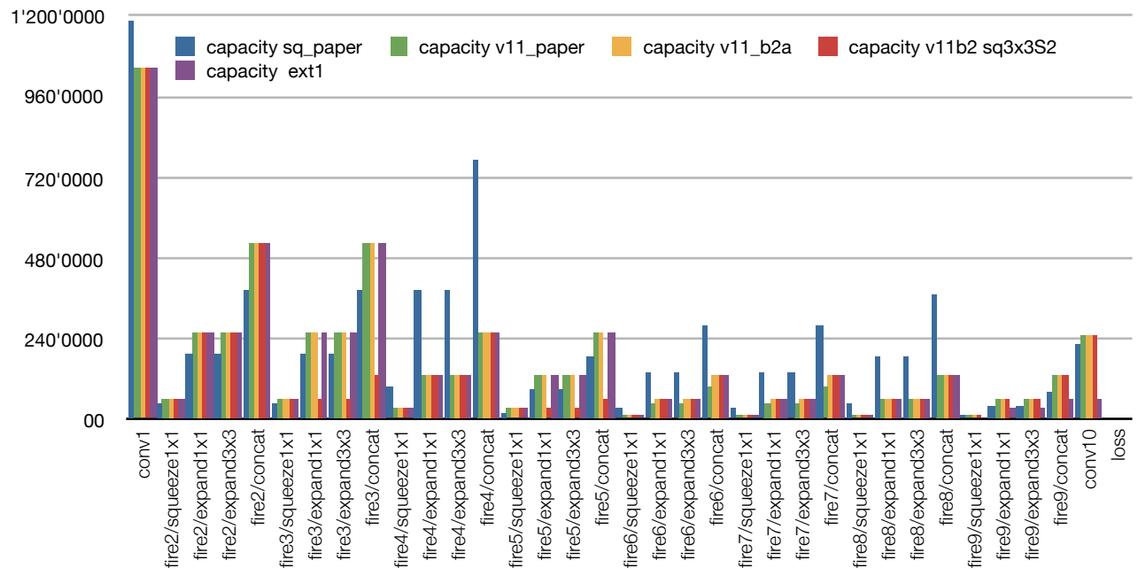
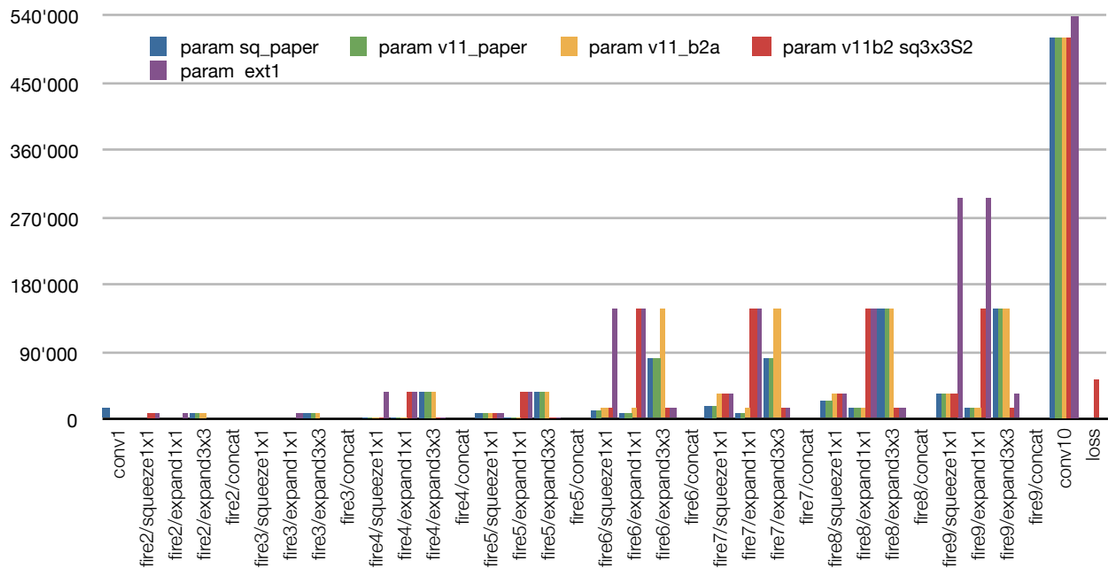
Comparison + Analysis SqueezeNet v1.1

layer	capacity sq_paper	capacity v11_paper	capacity v11_b2a	capacity v11b2 sq3x3S2	capacity ext1	capacity ext3		macc sq_paper	macc v11_paper	macc v11_b2a	macc v11b2 sq3x3 S2	macc ext1	macc ext3		param sq_paper	param v11_paper	param v11_b2a	param v11b2 sq3x3 S2	param ext1	param ext3		ch_out sq_paper	ch_out v11_paper	ch_out v11_b2a	ch_out v11b2 sq3x3 S2	ch_out ext1	ch_out ext3		avg ch_out	avg ch_in	width sq_paper	width v11_paper	width v11_b2a	width v11b2 sq3x3 S2	width ext1	width ext3		avg size	ch_out latency (8 PEs)	total cycles		ch_out latency (8 PEs) ideal	total cycles	
conv1	1.2E+06	1.0E+06	1.0E+06	1.0E+06	1.0E+06	1.0E+06		1.7E+08	2.8E+07	2.8E+07	2.8E+07	2.8E+07	2.8E+07	4.6 %	1.4E+04	1.7E+03	1.7E+03	1.7E+03	1.7E+03	1.7E+03		96	64	64	64	64	64		3.0	0.1	227	256	256	256	256	256		11.8	58.0	1.1E+07		12.0	2.4E+06	
fire2/squeeze1x1	4.8E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04		4.6E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	3.8E+07	6.1 %	1.5E+03	1.0E+03	1.0E+03	9.2E+03	9.2E+03	9.2E+03		16	16	16	16	16	16		1.0	3.9	55	64	64	128	128	128		7.9	51.0	2.5E+06		8.0	3.9E+05	
fire2/expand1x1	1.9E+05	2.6E+05	2.6E+05	2.6E+05	2.6E+05	2.6E+05		3.1E+06	4.2E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	6.1 %	1.0E+03	1.0E+03	1.0E+03	1.0E+03	9.2E+03	9.2E+03		64	64	64	64	64	64		3.9	1.0	55	64	64	64	64	64		3.9	58.0	7.1E+05		15.0	1.8E+05	
fire2/expand3x3	1.9E+05	2.6E+05	2.6E+05	2.6E+05	2.6E+05	2.6E+05		2.8E+07	3.8E+07	3.8E+07	3.8E+07	4.2E+06	4.2E+06	0.7 %	9.2E+03	9.2E+03	9.2E+03	1.0E+03	1.0E+03	1.0E+03		64	64	64	64	64	64		0.4	0.4	55	64	64	64	64	64		0.4	58.0	7.1E+05		15.0	1.8E+05	
fire2/concat	3.9E+05	5.2E+05	5.2E+05	5.2E+05	5.2E+05	5.2E+05								0.0 %								128	128	128	128	128	128		0.0	0.0	55	64	64	64	64	64		0.0	64.0	7.9E+05		24.0	2.9E+05	
fire3/squeeze1x1	4.8E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04		6.2E+06	8.4E+06	8.4E+06	8.4E+06	8.4E+06	8.4E+06	1.4 %	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03	2.0E+03		16	16	16	16	16	16		0.2	1.7	55	64	64	64	64	64		0.9	51.0	6.3E+05		8.0	9.8E+04	
fire3/expand1x1	1.9E+05	2.6E+05	2.6E+05	6.6E+04	2.6E+05	2.6E+05		3.1E+06	4.2E+06	4.2E+06	1.0E+06	3.8E+07	3.8E+07	6.1 %	1.0E+03	1.0E+03	1.0E+03	1.0E+03	9.2E+03	9.2E+03		64	64	64	64	64	64		3.9	1.0	55	64	64	64	64	64		3.9	58.0	7.1E+05		15.0	1.8E+05	
fire3/expand3x3	1.9E+05	2.6E+05	2.6E+05	6.6E+04	2.6E+05	2.6E+05		2.8E+07	3.8E+07	3.8E+07	9.4E+06	4.2E+06	4.2E+06	0.7 %	9.2E+03	9.2E+03	9.2E+03	1.0E+03	1.0E+03	1.0E+03		64	64	64	64	64	64		0.4	0.4	55	64	64	64	64	64		0.4	58.0	7.1E+05		15.0	1.8E+05	
fire3/concat	3.9E+05	5.2E+05	5.2E+05	1.3E+05	5.2E+05	5.2E+05								0.0 %								128	128	128	128	128	128		0.0	0.0	55	64	64	32	64	64		0.0	64.0	7.9E+05		24.0	2.9E+05	
fire4/squeeze1x1	9.7E+04	3.3E+04	3.3E+04	3.3E+04	3.3E+04	3.3E+04		1.2E+07	4.2E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	6.1 %	4.1E+03	4.1E+03	4.1E+03	4.1E+03	3.7E+04	3.7E+04		32	32	32	32	32	32		2.0	7.9	55	32	32	32	64	64		3.9	54.0	6.6E+05		10.0	1.2E+05	
fire4/expand1x1	3.9E+05	1.3E+05	1.3E+05	1.3E+05	1.3E+05	1.3E+05		1.2E+07	4.2E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	6.1 %	4.1E+03	4.1E+03	4.1E+03	3.7E+04	3.7E+04	3.7E+04		128	128	128	128	128	128		7.9	2.0	55	32	32	32	32	32		2.0	64.0	2.0E+05		24.0	7.4E+04	
fire4/expand3x3	3.9E+05	1.3E+05	1.3E+05	1.3E+05	1.3E+05	1.3E+05		1.1E+08	3.8E+07	3.8E+07	3.8E+07	4.2E+06	4.2E+06	0.7 %	3.7E+04	3.7E+04	3.7E+04	4.1E+03	4.1E+03	4.1E+03		128	128	128	128	128	128		0.9	0.9	55	32	32	32	32	32		0.2	64.0	2.0E+05		24.0	7.4E+04	
fire4/concat	7.7E+05	2.6E+05	2.6E+05	2.6E+05	2.6E+05	2.6E+05								0.0 %								256	256	256	256	256	256		0.0	0.0	55	32	32	32	32	32		0.0	80.0	2.5E+05		40.0	1.2E+05	
fire5/squeeze1x1	2.3E+04	3.3E+04	3.3E+04	3.3E+04	3.3E+04	3.3E+04		6.0E+06	8.4E+06	8.4E+06	8.4E+06	8.4E+06	8.4E+06	1.4 %	8.2E+03	8.2E+03	8.2E+03	8.2E+03	8.2E+03	8.2E+03		32	32	32	32	32	32		0.4	3.5	27	32	32	32	32	32		0.4	54.0	1.7E+05		10.0	3.1E+04	
fire5/expand1x1	9.3E+04	1.3E+05	1.3E+05	3.3E+04	1.3E+05	1.3E+05		3.0E+06	4.2E+06	4.2E+06	1.0E+06	3.8E+07	3.8E+07	6.1 %	4.1E+03	4.1E+03	4.1E+03	3.7E+04	3.7E+04	3.7E+04		128	128	128	128	128	128		7.9	2.0	27	32	32	32	32	32		2.0	64.0	2.0E+05		24.0	7.4E+04	
fire5/expand3x3	9.3E+04	1.3E+05	1.3E+05	3.3E+04	1.3E+05	1.3E+05		2.7E+07	3.8E+07	3.8E+07	9.4E+06	4.2E+06	4.2E+06	0.7 %	3.7E+04	3.7E+04	3.7E+04	4.1E+03	4.1E+03	4.1E+03		128	128	128	128	128	128		0.9	0.9	27	32	32	32	32	32		0.2	64.0	2.0E+05		24.0	7.4E+04	
fire5/concat	1.9E+05	2.6E+05	2.6E+05	6.6E+04	2.6E+05	2.6E+05								0.0 %								256	256	256	256	256	256		0.0	0.0	27	32	32	16	32	32		0.0	80.0	2.5E+05		40.0	1.2E+05	
fire6/squeeze1x1	3.5E+04	1.2E+04	1.6E+04	1.6E+04	1.6E+04	1.6E+04		9.0E+06	3.1E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	6.1 %	1.2E+04	1.2E+04	1.6E+04	1.6E+04	1.5E+05	1.5E+05		48	48	64	64	64	64		3.9	15.7	27	16	16	16	32	32		2.0	58.0	1.8E+05		15.0	4.6E+04	
fire6/expand1x1	1.4E+05	4.9E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04		6.7E+06	2.4E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	6.1 %	9.2E+03	9.2E+03	1.6E+04	1.5E+05	1.5E+05	1.5E+05		192	192	256	256	256	256		15.7	3.9	27	16	16	16	16	16		1.0	80.0	6.1E+04		40.0	3.1E+04	
fire6/expand3x3	1.4E+05	4.9E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04		6.0E+07	2.1E+07	3.8E+07	3.8E+07	4.2E+06	4.2E+06	0.7 %	8.3E+04	8.3E+04	1.5E+05	1.6E+04	1.6E+04	1.6E+04		192	192	256	256	256	256		1.7	1.7	27	16	16	16	16	16		0.1	80.0	6.1E+04		40.0	3.1E+04	
fire6/concat	2.8E+05	9.8E+04	1.3E+05	1.3E+05	1.3E+05	1.3E+05								0.0 %								384	384	512	512	512	512		0.0	0.0	27	16	16	16	16	16		0.0	113.0	8.7E+04		73.0	5.6E+04	
fire7/squeeze1x1	3.5E+04	1.2E+04	1.6E+04	1.6E+04	1.6E+04	1.6E+04		1.3E+07	4.7E+06	8.4E+06	8.4E+06	8.4E+06	8.4E+06	1.4 %	1.8E+04	1.8E+04	3.3E+04	3.3E+04	3.3E+04	3.3E+04		48	48	64	64	64	64		0.9	7.0	27	16	16	16	16	16		0.2	58.0	4.5E+04		15.0	1.2E+04	
fire7/expand1x1	1.4E+05	4.9E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04		6.7E+06	2.4E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	6.1 %	9.2E+03	9.2E+03	1.6E+04	1.5E+05	1.5E+05	1.5E+05		192	192	256	256	256	256		15.7	3.9	27	16	16	16	16	16		1.0	80.0	6.1E+04		40.0	3.1E+04	
fire7/expand3x3	1.4E+05	4.9E+04	6.6E+04	6.6E+04	6.6E+04	6.6E+04		6.0E+07	2.1E+07	3.8E+07	3.8E+07	4.2E+06	4.2E+06	0.7 %	8.3E+04	8.3E+04	1.5E+05	1.6E+04	1.6E+04	1.6E+04		192	192	256	256	256	256		1.7	1.7	27	16	16	16	16	16		0.1	80.0	6.1E+04		40.0	3.1E+04	
fire7/concat	2.8E+05	9.8E+04	1.3E+05	1.3E+05	1.3E+05	1.3E+05								0.0 %								384	384	512	512	512	512		0.0	0.0	27	16	16	16	16	16		0.0	113.0	8.7E+04		73.0	5.6E+04	
fire8/squeeze1x1	4.7E+04	1.6E+04	1.6E+04	1.6E+04	1.6E+04	8.2E+03		1.8E+07	6.3E+06	8.4E+06	8.4E+06	8.4E+06	3.8E+07	6.1 %	2.5E+04	2.5E+04	3.3E+04	3.3E+04	3.3E+04	5.9E+05		64	64	64	64	64	128		7.9	31.5	27	16	16	16	16	16		1.0	64.0	4.9E+04		24.0	1.8E+04	
fire8/expand1x1	1.9E+05	6.6E+04	6.6E+04	6.6E+04	6.6E+04	3.3E+04		1.2E+07	4.2E+06	4.2E+06	4.2E+06	3.8E+07	3.8E+07	6.1 %	1.6E+04	1.6E+04	1.6E+04	1.5E+05	1.5E+05	5.9E+05		256	256	256	256	256	512		31.5	7.9	27	16	16	16	16	8		0.5	113.0	2.2E+04		73.0	1.4E+04	
fire8/expand3x3	1.9E+05	6.6E+04	6.6E+04	6.6E+04	6.6E+04	3.3E+04		1.1E+08	3.8E+07	3.8E+07	3.8E+07	4.2E+06	4.2E+06	0.7 %	1.5E+05	1.5E+05	1.5E+05	1.6E+04	1.6E+04	6.6E+04		256	256	256	256	256	512		3.5	3.5	27	16	16	16	16	8		0.1	113.0	2.2E+04		73.0	1.4E+04	
fire8/concat	3.7E+05	1.3E+05	1.3E+05	1.3E+05	1.3E+05	6.6E+04								0.0 %								512	512	512	512	512	1024		0.0	0.0	27	16	16	16	16	8		0.0	177.0	3.4E+04		137.0	2.6E+04	
fire9/squeeze1x1	1.1E+04	1.6E+04	1.6E+04	1.6E+04	4.1E+03	8.2E+03		5.5E+06	8.4E+06	8.4E+06	8.4E+06	1.9E+07	8.4E+06	1.4 %	3.3E+04	3.3E+04	3.3E+04	3.3E+04	2.9E+05	1.3E+05		64	64	64	64	64	128		1.7	14.0	13	16	16	16	16	8		0.1	64.0	1.2E+04		24.0	4.6E+03	
fire9/expand1x1	4.3E+04	6.6E+04	6.6E+04	6.6E+04	3.3E+04	3.3E+04		2.8E+06	4.2E+06	4.2E+06	4.2E+06	1.9E+07	3.8E+07	6.1 %	1.6E+04	1.6E+04	1.6E+04	1.5E+05	2.9E+05	5.9E+05		256	256	256	256	512	512		31.5	7.9	13	16	16	16	8	8		0.5	113.0	2.2E+04		73.0	1.4E+04	
fire9/expand3x3	4.3E+04	6.6E+04	6.6E+04	6.6E+04	3.3E+04	3.3E+04		2.5E+07	3.8E+07	3.8E+07	3.8E+07	2.1E+06	4.2E+06	0.7 %	1.5E+05	1.5E+05	1.5E+05	1.6E+04	3.3E+04	6.6E+04		256	256	256	256	512	512		3.5	3.5	13	16	16	16	8	8		0.1	113.0	2.2E+04		73.0	1.4E+04	
fire9/concat	8.7E+04	1.3E+05	1.3E+05	1.3E+05	6.6E+04	6.6E+04								0.0 %								512	512	512	512	1024	1024		0.0	0.0	13	16	16	16	8	8		0.0	177.0	3.4E+04		137.0	2.6E+04	
conv10	2.3E+05	2.6E+05	2.6E+05	2.6E+05	6.4E+04	6.4E+04		1.2E+08	1.3E+08	1.3E+08	1.3E+08	6.6E+07	6.6E+07	10.7 %	5.1E+05	5.1E+05	5.1E+05	5.1E+05	1.0E+06	1.0E+06		1000	1000	1000	1000	1000	1000		106.7	109.3	13	16	16	16	8	8		0.9	176.0	3.4E+04		136.0	2.6E+04	
loss	1.0E+03	1.0E+03	1.0E+03	1.0E+03	1.0E+03	1.0E+03												5.4E+04											⌀ ch_out	⌀ ch_in	1	1	1	1	1	1		⌀ size						
													6.1E+08	**6.139 s**		1.2E+06	1.4E+06	1.4E+06	2.5E+06	3.7E+06						270	MHz			258.9	237.3						45.5		2.2E+07	**0.081 s**		5.3E+06	**0.02 s**

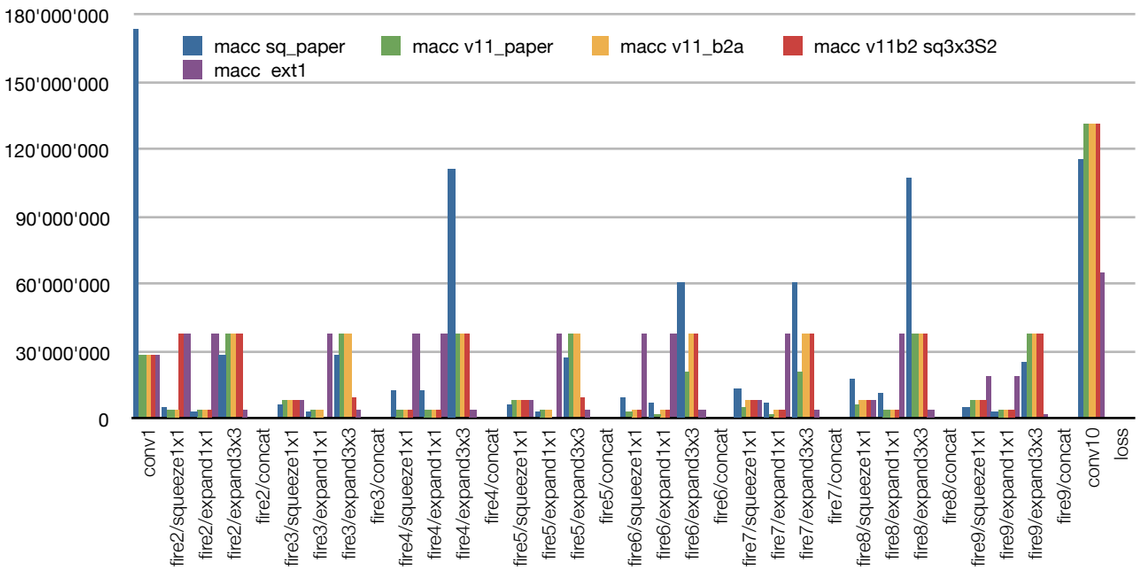
Network Capacity per Layer



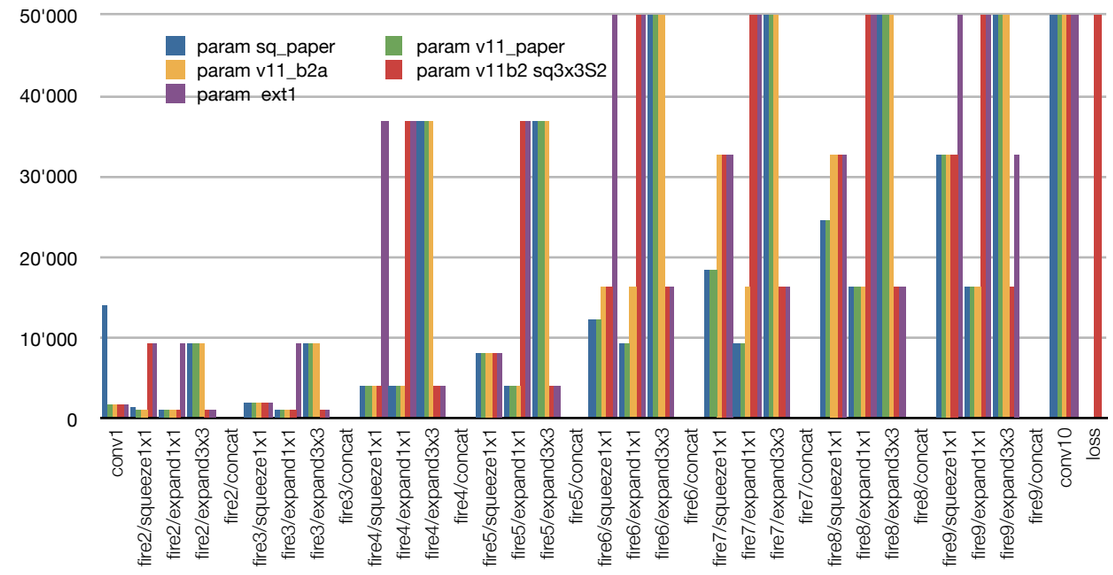
Parameters per Layer



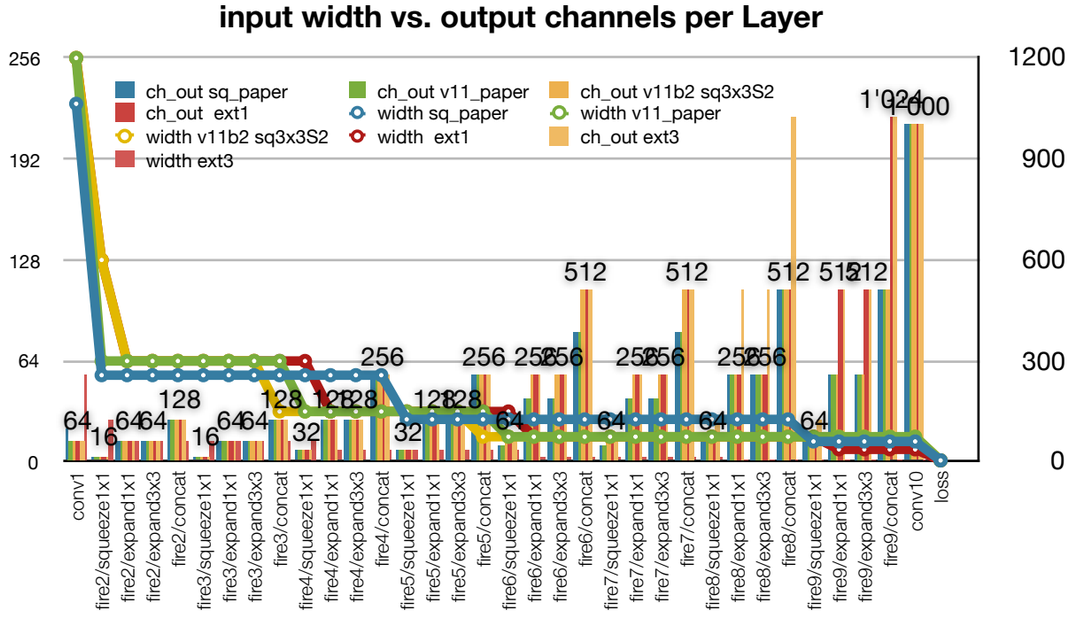
MACC Operations per Layer



Parameters per Layer



input width vs. output channels per Layer



layer	capacity sq_paper	macc sq_paper	param sq_paper	ch_out sq_paper	width sq_paper
conv1	1182816	173873952	14112	96	227
fire2/ squeeze1x1	48400	4646400	1536	16	55
fire2/ expand1x1	193600	3097600	1024	64	55
fire2/ expand3x3	193600	27878400	9216	64	55
fire2/concat	387200			128	55
fire3/ squeeze1x1	48400	6195200	2048	16	55
fire3/ expand1x1	193600	3097600	1024	64	55
fire3/ expand3x3	193600	27878400	9216	64	55
fire3/concat	387200			128	55
fire4/ squeeze1x1	96800	12390400	4096	32	55
fire4/ expand1x1	387200	12390400	4096	128	55
fire4/ expand3x3	387200	111513600	36864	128	55
fire4/concat	774400			256	55
fire5/ squeeze1x1	23328	5971968	8192	32	27
fire5/ expand1x1	93312	2985984	4096	128	27
fire5/ expand3x3	93312	26873856	36864	128	27
fire5/concat	186624			256	27
fire6/ squeeze1x1	34992	8957952	12288	48	27
fire6/ expand1x1	139968	6718464	9216	192	27
fire6/ expand3x3	139968	60466176	82944	192	27
fire6/concat	279936			384	27
fire7/ squeeze1x1	34992	13436928	18432	48	27
fire7/ expand1x1	139968	6718464	9216	192	27
fire7/ expand3x3	139968	60466176	82944	192	27
fire7/concat	279936			384	27
fire8/ squeeze1x1	46656	17915904	24576	64	27
fire8/ expand1x1	186624	11943936	16384	256	27
fire8/ expand3x3	186624	107495424	147456	256	27
fire8/concat	373248			512	27
fire9/ squeeze1x1	10816	5537792	32768	64	13
fire9/ expand1x1	43264	2768896	16384	256	13
fire9/ expand3x3	43264	24920064	147456	256	13
fire9/concat	86528			512	13
conv10	225000	115200000	512000	1000	13
loss	1000				1

layer	capacity v11_paper	macc v11_paper	param v11_paper	ch_out v11_paper	width v11_paper
conv1	1048576	28311552	1728	64	256
fire2/ squeeze1x1	65536	4194304	1024	16	64
fire2/ expand1x1	262144	4194304	1024	64	64
fire2/ expand3x3	262144	37748736	9216	64	64
fire2/concat	524288			128	64
fire3/ squeeze1x1	65536	8388608	2048	16	64
fire3/ expand1x1	262144	4194304	1024	64	64
fire3/ expand3x3	262144	37748736	9216	64	64
fire3/concat	524288			128	64
fire4/ squeeze1x1	32768	4194304	4096	32	32
fire4/ expand1x1	131072	4194304	4096	128	32
fire4/ expand3x3	131072	37748736	36864	128	32
fire4/concat	262144			256	32
fire5/ squeeze1x1	32768	8388608	8192	32	32
fire5/ expand1x1	131072	4194304	4096	128	32
fire5/ expand3x3	131072	37748736	36864	128	32
fire5/concat	262144			256	32
fire6/ squeeze1x1	12288	3145728	12288	48	16
fire6/ expand1x1	49152	2359296	9216	192	16
fire6/ expand3x3	49152	21233664	82944	192	16
fire6/concat	98304			384	16
fire7/ squeeze1x1	12288	4718592	18432	48	16
fire7/ expand1x1	49152	2359296	9216	192	16
fire7/ expand3x3	49152	21233664	82944	192	16
fire7/concat	98304			384	16
fire8/ squeeze1x1	16384	6291456	24576	64	16
fire8/ expand1x1	65536	4194304	16384	256	16
fire8/ expand3x3	65536	37748736	147456	256	16
fire8/concat	131072			512	16
fire9/ squeeze1x1	16384	8388608	32768	64	16
fire9/ expand1x1	65536	4194304	16384	256	16
fire9/ expand3x3	65536	37748736	147456	256	16
fire9/concat	131072			512	16
conv10	256000	131072000	512000	1000	16
loss	1000			1000	1

layer	capacity v11_b2a	macc v11_b2a	param v11_b2a	ch_out v11_b2a	width v11_b2a
conv1	1048576	28311552	1728	64	256
fire2/ squeeze1x1	65536	4194304	1024	16	64
fire2/ expand1x1	262144	4194304	1024	64	64
fire2/ expand3x3	262144	37748736	9216	64	64
fire2/concat	524288			128	64
fire3/ squeeze1x1	65536	8388608	2048	16	64
fire3/ expand1x1	262144	4194304	1024	64	64
fire3/ expand3x3	262144	37748736	9216	64	64
fire3/concat	524288			128	64
fire4/ squeeze1x1	32768	4194304	4096	32	32
fire4/ expand1x1	131072	4194304	4096	128	32
fire4/ expand3x3	131072	37748736	36864	128	32
fire4/concat	262144			256	32
fire5/ squeeze1x1	32768	8388608	8192	32	32
fire5/ expand1x1	131072	4194304	4096	128	32
fire5/ expand3x3	131072	37748736	36864	128	32
fire5/concat	262144			256	32
fire6/ squeeze1x1	16384	4194304	16384	64	16
fire6/ expand1x1	65536	4194304	16384	256	16
fire6/ expand3x3	65536	37748736	147456	256	16
fire6/concat	131072			512	16
fire7/ squeeze1x1	16384	8388608	32768	64	16
fire7/ expand1x1	65536	4194304	16384	256	16
fire7/ expand3x3	65536	37748736	147456	256	16
fire7/concat	131072			512	16
fire8/ squeeze1x1	16384	8388608	32768	64	16
fire8/ expand1x1	65536	4194304	16384	256	16
fire8/ expand3x3	65536	37748736	147456	256	16
fire8/concat	131072			512	16
fire9/ squeeze1x1	16384	8388608	32768	64	16
fire9/ expand1x1	65536	4194304	16384	256	16
fire9/ expand3x3	65536	37748736	147456	256	16
fire9/concat	131072			512	16
conv10	256000	131072000	512000	1000	16
loss	1000			1000	1

layer	capacity v11b2 sq3x3S2	macc v11b2 sq3x3S2	param v11b2 sq3x3S2	ch_out v11b2 sq3x3S2	width v11b2 sq3x3S2
conv1	1048576	28311552	1728	64	256
fire2/ squeeze1x1	65536	37748736	9216	16	128
fire2/ expand1x1	262144	4194304	1024	64	64
fire2/ expand3x3	262144	37748736	9216	64	64
fire2/concat	524288			128	64
fire3/ squeeze1x1	65536	8388608	2048	16	64
fire3/ expand1x1	65536	1048576	1024	64	64
fire3/ expand3x3	65536	9437184	9216	64	64
fire3/concat	131072			128	32
fire4/ squeeze1x1	32768	4194304	4096	32	32
fire4/ expand1x1	131072	4194304	4096	128	32
fire4/ expand3x3	131072	37748736	36864	128	32
fire4/concat	262144			256	32
fire5/ squeeze1x1	32768	8388608	8192	32	32
fire5/ expand1x1	32768	1048576	4096	128	32
fire5/ expand3x3	32768	9437184	36864	128	32
fire5/concat	65536			256	16
fire6/ squeeze1x1	16384	4194304	16384	64	16
fire6/ expand1x1	65536	4194304	16384	256	16
fire6/ expand3x3	65536	37748736	147456	256	16
fire6/concat	131072			512	16
fire7/ squeeze1x1	16384	8388608	32768	64	16
fire7/ expand1x1	65536	4194304	16384	256	16
fire7/ expand3x3	65536	37748736	147456	256	16
fire7/concat	131072			512	16
fire8/ squeeze1x1	16384	8388608	32768	64	16
fire8/ expand1x1	65536	4194304	16384	256	16
fire8/ expand3x3	65536	37748736	147456	256	16
fire8/concat	131072			512	16
fire9/ squeeze1x1	16384	8388608	32768	64	16
fire9/ expand1x1	65536	4194304	16384	256	16
fire9/ expand3x3	65536	37748736	147456	256	16
fire9/concat	131072			512	16
conv10	256000	131072000	512000	1000	16
loss	1000			1000	1

increase fire9/expandXxX #chout to 512, make fire9/squeeze1x1 squeeze3x3S2 -> 574 MMACCs

layer	capacity ext1	macc ext1	param ext1	ch_out ext1	width ext1
conv1	1048576	28311552	1728	64	256
fire2/ squeeze3x3	65536	37748736	9216	16	128
fire2/ expand3x3	262144	37748736	9216	64	64
fire2/ expand1x1	262144	4194304	1024	64	64
fire2/concat	524288			128	64
fire3/ squeeze1x1	65536	8388608	2048	16	64
fire3/ expand3x3	262144	37748736	9216	64	64
fire3/ expand1x1	262144	4194304	1024	64	64
fire3/concat	524288			128	64
fire4/ squeeze3x3	32768	37748736	36864	32	64
fire4/ expand3x3	131072	37748736	36864	128	32
fire4/ expand1x1	131072	4194304	4096	128	32
fire4/concat	262144			256	32
fire5/ squeeze1x1	32768	8388608	8192	32	32
fire5/ expand3x3	131072	37748736	36864	128	32
fire5/ expand1x1	131072	4194304	4096	128	32
fire5/concat	262144			256	32
fire6/ squeeze3x3	16384	37748736	147456	64	32
fire6/ expand3x3	65536	37748736	147456	256	16
fire6/ expand1x1	65536	4194304	16384	256	16
fire6/concat	131072			512	16
fire7/ squeeze1x1	16384	8388608	32768	64	16
fire7/ expand3x3	65536	37748736	147456	256	16
fire7/ expand1x1	65536	4194304	16384	256	16
fire7/concat	131072			512	16
fire8/ squeeze1x1	16384	8388608	32768	64	16
fire8/ expand3x3	65536	37748736	147456	256	16
fire8/ expand1x1	65536	4194304	16384	256	16
fire8/concat	131072			512	16
fire9/ squeeze3x3	4096	18874368	294912	64	16
fire9/ expand3x3	32768	18874368	294912	512	8
fire9/ expand1x1	32768	2097152	32768	512	8
fire9/concat	65536			1024	8
conv10	64000	65536000	1024000	1000	8
loss	1000			1000	1

increase fire9/expandXxX #chout to 512, make fire9/squeeze1x1 squeeze3x3S2 -> 574 MMACCs

layer	capacity ext3	macc ext3	param ext3	ch_out ext3	width ext3
conv1	1048576	28311552	1728	64	256
fire2/ squeeze3x3	65536	37748736	9216	16	128
fire2/ expand3x3	262144	37748736	9216	64	64
fire2/ expand1x1	262144	4194304	1024	64	64
fire2/concat	524288			128	64
fire3/ squeeze1x1	65536	8388608	2048	16	64
fire3/ expand3x3	262144	37748736	9216	64	64
fire3/ expand1x1	262144	4194304	1024	64	64
fire3/concat	524288			128	64
fire4/ squeeze3x3	32768	37748736	36864	32	64
fire4/ expand3x3	131072	37748736	36864	128	32
fire4/ expand1x1	131072	4194304	4096	128	32
fire4/concat	262144			256	32
fire5/ squeeze1x1	32768	8388608	8192	32	32
fire5/ expand3x3	131072	37748736	36864	128	32
fire5/ expand1x1	131072	4194304	4096	128	32
fire5/concat	262144			256	32
fire6/ squeeze3x3	16384	37748736	147456	64	32
fire6/ expand3x3	65536	37748736	147456	256	16
fire6/ expand1x1	65536	4194304	16384	256	16
fire6/concat	131072			512	16
fire7/ squeeze1x1	16384	8388608	32768	64	16
fire7/ expand3x3	65536	37748736	147456	256	16
fire7/ expand1x1	65536	4194304	16384	256	16
fire7/concat	131072			512	16
fire8/ squeeze3x3	8192	37748736	589824	128	16
fire8/ expand3x3	32768	37748736	589824	512	8
fire8/ expand1x1	32768	4194304	65536	512	8
fire8/concat	65536			1024	8
fire9/ squeeze1x1	8192	8388608	131072	128	8
fire9/ expand3x3	32768	37748736	589824	512	8
fire9/ expand1x1	32768	4194304	65536	512	8
fire9/concat	65536			1024	8
conv10	64000	65536000	1024000	1000	8
loss	1000			1000	1