

Performance Evaluation 1 - Number of KeyPoints by Each Detector											
Detectors	Image 1	Image 2	Image 3	Image 4	Image 5	Image 6	Image 7	Image 8	Image 9	Image 10	Average
FAST	149	152	150	155	149	149	156	150	138	143	149
BRISK	264	282	282	277	297	279	289	272	266	254	276
ORB	92	102	106	113	109	125	130	129	127	128	116
AKAZE	166	157	161	155	163	164	173	175	177	179	167
SIFT	138	132	124	137	134	140	137	148	159	137	139
HARRIS	17	14	18	21	26	43	18	31	26	34	25
SHITOMASI	125	118	123	120	120	113	114	123	111	112	118

Time Taken By Each Detector(ms)											
Detectors	Image 1	Image 2	Image 3	Image 4	Image 5	Image 6	Image 7	Image 8	Image 9	Image 10	Average(ms)
FAST	0.8208	0.60277	0.81311	0.62717	0.62081	0.60291	0.63303	0.54144	0.62245	0.60217	0.648666
BRISK	32.769287	40.640756	30.348228	30.274287	30.917287	41.771736	30.761287	29.762908	38.827386	30.539857	33.6613019
ORB	6.61989	5.64404	5.049789	22.722508	5.44152	5.52217	9.343269	5.222349	7.596309	5.650939	7.8812783
AKAZE	158.189985	177.394974	197.777842	210.970121	198.886612	196.361062	266.023956	209.188731	198.684292	197.018862	201.0496437
SIFT	171.183935	186.901813	168.438165	169.584114	176.696104	175.408894	185.636263	202.692751	186.454572	176.040564	179.9037175
HARRIS	13.076939	10.696429	10.289169	10.001869	10.516879	27.617667	9.409279	11.375519	37.778897	15.008508	15.5771155
SHITOMASI	14.138009	13.447519	11.194309	11.084139	11.814879	10.874399	10.599049	10.626519	11.118559	10.781079	11.567846

DETECTOR	DESCRIPTOR	Number of Matched KeyPoints/% match/TimeTaken Avg										Average Matched KeyPoints	%Match	Average Time Taken for Description (ms)
		1#2	2#3	3#4	4#5	5#6	6#7	7#8	8#9	9#10				
FAST	BRISK	97	104	101	98	85	107	107	100	100	99.88888889	67.03952274	1.6246698	
	BRIEF	119	130	118	126	108	123	131	125	119	122.11111111	81.95376585	1.1709399	
	ORB	123	126	117	131	114	122	133	128	117	123.44444444	82.84862043	0.8019929	
	FREAK	98	99	91	98	85	99	102	101	105	97.55555556	65.47352722	35.9589668	
	SIFT	118	123	110	119	114	119	123	117	103	116.22222222	78.00149142	31.7580719	
BRISK	BRISK	171	176	157	176	174	188	173	171	184	174.44444444	63.20450886	2.7282609	
	BRIEF	178	205	185	179	183	195	207	189	183	189.33333333	68.59903382	0.7884439	
	ORB	164	176	149	170	160	176	175	162	174	167.33333333	60.62801932	3.4319956	
	FREAK	160	177	155	173	161	183	169	178	168	169.33333333	61.352657	23.1981408	
	SIFT	182	193	169	183	171	195	194	176	183	182.88888889	66.26409018	51.4937012	
ORB	BRISK	73	74	79	85	79	92	90	88	91	83.44444444	71.9348659	1.1645829	
	BRIEF	49	43	45	59	53	78	68	84	66	60.55555556	52.20306513	0.4588311	
	ORB	68	71	78	85	87	96	95	93	97	85.55555556	73.75478927	0.9781101	
	FREAK	42	36	44	47	44	51	52	48	56	46.66666667	40.22985066	38.7958624	
	SIFT	67	79	78	79	82	95	95	94	94	84.77777778	73.08429119	100.6769488	
AKAZE	BRISK	137	125	129	129	131	132	142	146	144	135	80.83832335	1.7879207	
	BRIEF	141	134	131	130	134	146	150	148	152	140.66666667	84.23153693	0.9300097	
	ORB	129	122	120	121	129	131	138	144	146	131.11111111	78.50964737	2.780568	
	AKAZE	138	138	133	127	129	146	147	151	150	139.88888889	83.76590173	195.3234716	
	FREAK	126	129	127	121	122	133	144	147	138	131.88888889	78.97538257	51.6563583	
SIFT	SIFT	134	134	130	136	137	147	147	154	151	141.11111111	84.49767132	42.0813282	
	BRISK	64	66	62	66	59	64	64	67	80	65.77777778	47.32214229	1.1930189	
	BRIEF	86	78	76	85	69	74	76	70	88	78	56.11510791	0.6307829	
	FREAK	65	72	64	66	59	59	64	65	79	65.88888889	47.40207834	55.2394879	
	SIFT	82	81	85	93	90	81	82	102	104	88.88888889	63.94884093	114.4191016	
HARRIS	BRISK	12	10	14	15	16	16	15	23	21	15.77777778	63.11111111	0.4188358	
	BRIEF	14	11	15	20	24	26	16	24	23	19.22222222	76.88888889	0.2440759	
	ORB	13	12	17	17	22	23	17	25	23	18.77777778	75.11111111	0.566798	
	FREAK	13	13	15	15	17	20	12	21	18	16	64	22.826096	
	SIFT	14	11	16	19	22	22	13	24	22	18.11111111	72.44444444	15.7756497	
SHITOMASI	BRISK	95	88	80	90	82	79	85	86	82	85.22222222	72.22222222	1.0399819	
	BRIEF	115	111	104	101	102	102	100	109	100	104.88888889	88.88888889	0.4177359	
	ORB	111	108	104	103	101	102	99	105	95	103.11111111	87.38229755	0.604751	
	FREAK	86	90	86	88	86	80	81	86	85	85.33333333	72.31638418	25.4844488	
	SIFT	112	109	104	103	99	101	96	106	97	103	87.28813559	19.1632951	

DETECTOR	DESCRIPTOR	Time Taken by Each Combination(ms)										Average Time Taken
		1	2	3	4	5	6	7	8	9	10	
FAST	BRISK	2.45889	2.04693	1.957319	1.29283	1.28326	2.11261	1.44282	1.23097	1.206249	1.21482	1.6246698
	BRIEF	1.80422	1.44464	0.81618	1.70448	0.78977	0.79114	1.69677	0.46045	1.009719	1.19203	1.1709399
	ORB	1.01362	0.65576	0.64032	0.69176	0.618209	0.63019	0.6451	1.299911	0.921769	0.90329	0.8019929
	FREAK	27.131267	25.919478	54.299446	22.805088	65.337594	24.197028	43.190536	23.000818	22.087258	51.621155	35.9589668
	SIFT	16.657659	17.222308	71.883393	15.254488	10.124508	15.490198	24.962618	60.378775	10.397329	75.209443	31.7580719
BRISK	BRISK	2.12334	3.28616	2.17241	6.32352	2.353369	2.22952	2.24757	2.22261	2.21493	2.10918	2.7282609
	BRIEF	0.71118	0.71561	1.01844	0.70095	0.69513	1.210889	0.71714	0.70338	0.66225	0.74947	0.7884439
	ORB	3.37471	4.04117	3.27594	3.43898	3.29862	3.427279	3.420509	3.899259	3.07159	3.071899	3.4319956
	FREAK	24.194827	23.391668	24.446817	22.788888	23.236528	22.656978	22.643278	22.478548	22.736778	23.077658	23.1981408
	SIFT	22.499978	64.418064	36.488636	75.618424	53.901005	60.865654	35.541827	64.302294	34.400526	66.900604	51.4937012
ORB	BRISK	0.745769	0.84464	1.18914	1.59247	0.91606	1.394091	1.13498	1.46607	1.01517	1.347439	1.1645829
	BRIEF	0.55783	0.36889	0.40334	0.51036	0.37678	0.50621	0.406951	0.60606	0.39818	0.45371	0.4588311
	ORB	3.79621	3.23406	4.73558	4.419639	64.112324	3.47652	3.317529	3.6095	3.214159	3.895469	0.9781101
	FREAK	26.772148	54.866415	21.952348	62.046844	22.246737	65.037514	21.923758	25.732968	65.044754	22.335408	38.7958624
	SIFT	93.438192	85.365683	90.641702	92.753981	180.631584	89.576181	89.920772	100.59342	97.148191	86.699782	100.6769488
AKAZE	BRISK	1.74447	1.31277	1.3199	2.606409	1.316539	2.36678	2.22229	1.47851	1.41162	2.099919	1.7879207
	BRIEF	2.002139	1.2148	0.53234	0.52292	0.528519	0.952059	1.0165	0.96607	1.04672	0.51803	0.9300097
	ORB	4.39304	2.40809	3.50435	2.1647	1.83245	2.11916	2.12627	2.35163	2.69328	4.21271	2.780568
	AKAZE	191.537352	192.296801	193.137032	205.32828	193.769612	192.553912	195.038252	194.616612	201.274111	193.682752	195.3234716
	FREAK	22.097798	23.822538	99.344061	97.668181	101.07027	80.585133	22.599618	23.393088	22.496508	23.486388	51.6563583
SIFT	82.538002	12.660279	76.200533	15.55269	13.145089	18.783568	13.254248	85.020753	85.450962	18.204579	42.0813282	
SIFT	BRISK	1.4936	1.12981	1.060639	1.17026	1.1089	1.17865	1.13262	1.21931	1.26458	1.17182	1.1930189
	BRIEF	0.468349	0.58668	0.44456	0.76888	0.63824	0.8027	0.44989	0.71016	0.57684	0.86153	0.6307829
	FREAK	102.46994	108.36932	99.153191	26.515427	97.307381	23.782908	23.393188	25.243068	23.443278	22.717178	55.2394879
	SIFT	104.60293	121.424578	112.02246	100.052831	48.151546	188.308543	108.89918	118.51368	140.781257	101.434011	114.4191016
	HARRIS	BRISK	0.41226	0.27733	0.33304	0.38886	0.40853	0.53404	0.316739	0.6673	0.399299	0.45096
BRIEF		0.17446	0.15326	0.15711	0.20284	0.472259	0.27128	0.20277	0.18491	0.32694	0.29493	0.2440759
ORB		0.70999	0.69617	0.7057	0.49352	0.48497	0.56304	0.49662	0.53024	0.47614	0.51159	0.566798
FREAK		24.084388	22.611768	22.482698	22.937909	23.692198	22.823558	23.515527	21.755938	21.724118	22.623696	22.826096
SIFT		7.811109	7.590899	37.126737	7.93287	7.588759	8.436759	8.20115	11.215089	7.906369	53.946756	15.7756497
SHITOMASI	BRISK	1.06336	1.10394	1.08304	1.094451	1.00637	0.97389	1.042259	1.070839	0.97758	0.98979	1.0398919
	BRIEF	0.390951	0.35438	0.35619	0.50598	0.437499	0.525869	0.37019	0.53966	0.35357	0.34307	0.4177359
	ORB	0.60477	0.56354	0.56199	0.57676	0.75979	0.59363	0.59464	0.60118	0.5951	0.59611	0.604751
	FREAK	21.855778	21.586888	22.400628	21.637578	23.477148	21.505398	21.867369	21.520158	21.617068	21.375953	25.4844448
	SIFT	8.076459	8.440449	7.913259	7.632169	11.261171	7.835669	60.311685	7.527979	64.935624	7.76679	19.1632951



FAST
 Good number of keypoints defining vehicle edge [+0.8] Indicators are detected good[+1] . Rear window has quite a good numbers [+1]. Number plate is detected and one or two keypoints are identified. [+0.3] Avg Running time - [0.6ms] which is impressive[+1] . My overall rating [4.1/5]



HARRIS
 Seems very less number of keypoints on edges [+0.2] and indicators are detected [+1]. Rear window has meagre keypoints [+0.2] Average Running Time (15 ms) - [+0.6] - My rating 2/5



ORB
 The vehicle edges are being detected seems there are some spillovers to road [+0.7]. Indicators has most number of keypoints in scales [+1]. Rear window also has a considerable keypoints [+0.7]. No keypoints on Number plate.Avg Running time 7ms - [+0.6] . My Rating - 3.2/5



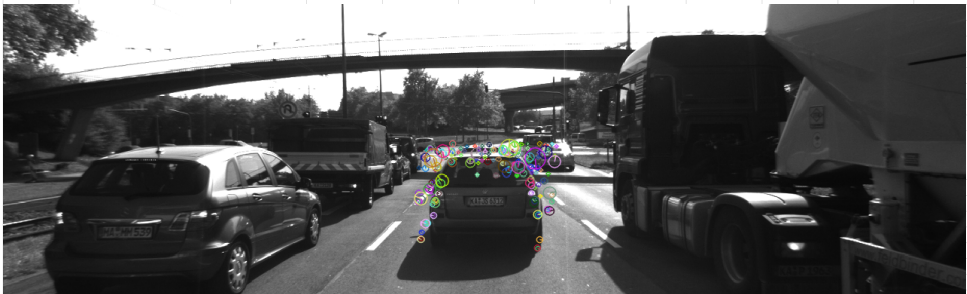
SHITOMASI
 Number plate has more number of keypoints (+1) compared to vehicle edges, the rear window has less number of points. Indicator lights are also detected[+1]. Overall Average Detector for the current setting. Avg Running time (11ms) - (0.6) . My rating - [2.6/5]



SIFT
 The vehicle edges are detected but some keypoints spilled on to road[+0.6] and considerable number of key points on rear window too[+0.6]. Indicators are also detected at small scales[+1]. Number plate has less keypoints for this setting (+0.4) . Average Running Time : 139ms which is high. My rating 2.5/5



BRISK
The vehicle edges are very well detected at different scale levels[+1] and good numbers of keypoints in the rear window too[+1].
Indicators are also very well detected [+1] at small scales. Trying to capture most keypoints. Number plates has ok keypoints [0.5]. Avg Running Time 33ms. [+0.3] - My rating 3.8/5



AKAZE
The vehicle edges are detected good [+1] , average key points on rear window [+0.7]. No Keypoints on Number plate . Indicators are detected [+1]. Average Running Time : 201ms which way too high .
My rating : [2.7/5]