

## Supplementary Materials

**Table S1.** The results of using different detectors in the E1 images.

		Elevation 1	
Detector		Left Image (E1)	Right Image (E1)
(1)	-		
(2)	AGAST		
(3)	AKAZE		
(4)	BRISK		
(5)	FAST		
(6)	GFTT		



(7) KAZE



(8) MSD



(9) MSER



(10) ORB



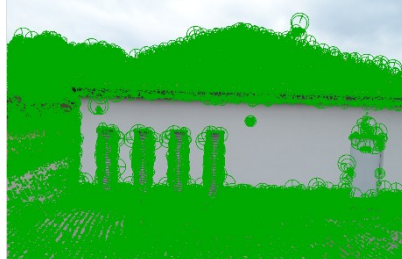
(11) SIFT



(12) STAR



(13) SURF



(a)

(b)

(c)



**Table S2.** The results of using different detectors in the E2 images.

Elevation 2		
Detector	Left Image (E2)	Right Image (E2)
(1) -		
(2) AGAST		
(3) AKAZE		
(4) BRISK		
(5) FAST		
(6) GFTT		
(7) KAZE		



(8) MSD



(9) MSER



(10) ORB



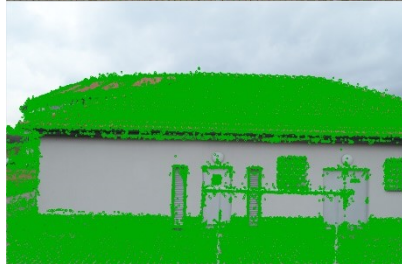
(11) SIFT



(12) STAR



(13) SURF



---

(a)













(b)

(c)

---



**Table S3.** The results of using different detectors in the E3 images.

Elevation 3		
Detector	Left Image (E3)	Right Image (E3)
(1) -		
(2) AGAST		
(3) AKAZE		
(4) BRISK		
(5) FAST		
(6) GFTT		
(7) KAZE		



(8) MSD



(9) MSER



(10) ORB



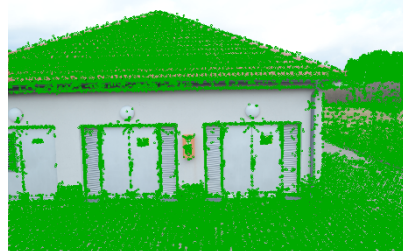
(11) SIFT



(12) STAR



(13) SURF



---

(a)

(b)

(c)

---



**Table S4.** The results of using different detectors in the E4 images.

Elevation 4		
Detector	Left Image (E4)	Right Image (E4)
(1) -		
(2) AGAST		
(3) AKAZE		
(4) BRISK		
(5) FAST		
(6) GFTT		
(7) KAZE		



(8) MSD



(9) MSER



(10) ORB



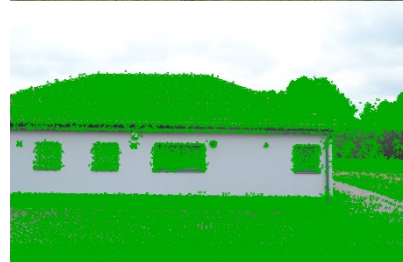
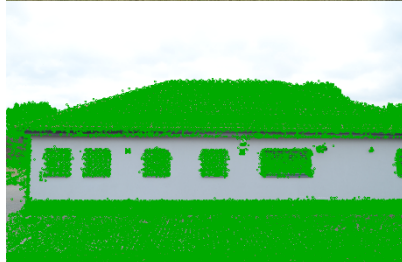
(11) SIFT



(12) STAR



(13) SURF











































































(a)

(b)





























































(c)




Table S5. The image matching results of elevation 1-4 using different detectors and descriptors.

Detector	Descriptor	Images (E1)		Images (E2)		Images (E3)		Images (E4)	
1	-								
2	AGAST								
3	AGAST								
4	AGAST								
5	AGAST								
6	AGAST								
7	AGAST								
8	AGAST								
	LATCH								



9	AGAST	LSS								
10	AGAST	ORB								
11	AGAST	VGG								
12	AGAST	SIFT								
13	AGAST	SURF								
14	AKAZE	AKAZE								
15	AKAZE	BOOST								
16	AKAZE	BRIEF								



17	AKAZE	BRISK								
18	AKAZE	DAISY								
19	AKAZE	FREAK								
20	AKAZE	HOG								
21	AKAZE	KAZE								
22	AKAZE	LATCH								
23	AKAZE	LSS								
24	AKAZE	ORB								















25	AKAZE	VGG								
26	AKAZE	SIFT								
27	AKAZE	SURF								
28	BRISK	BOOST								
29	BRISK	BRIEF								
30	BRISK	BRISK								
31	BRISK	DAISY								
32	BRISK	FREAK								






33	BRISK	LATCH								
34	BRISK	LSS								
35	BRISK	ORB								
36	BRISK	VGG								
37	BRISK	SIFT								
38	BRISK	SURF								
39	FAST	BOOST								
40	FAST	BRIEF								




41	FAST	BRISK								
42	FAST	DAISY								
43	FAST	FREAK								
44	FAST	HOG								
45	FAST	LATCH								
46	FAST	LSS								
47	FAST	ORB								
48	FAST	VGG								



49	FAST	SIFT								
50	FAST	SURF								
51	GFTT	BOOST								
52	GFTT	BRIEF								
53	GFTT	BRISK								
54	GFTT	DAISY								
55	GFTT	FREAK								
56	GFTT	HOG								



57	GFTT	LATCH								
58	GFTT	LSS								
59	GFTT	ORB								
60	GFTT	VGG								
61	GFTT	SIFT								
62	GFTT	SURF								
63	KAZE	AKAZE								
64	KAZE	BOOST								











65	KAZE	BRIEF								
66	KAZE	BRISK								
67	KAZE	DAISY								
68	KAZE	FREAK								
69	KAZE	HOG								
70	KAZE	KAZE								
71	KAZE	LATCH								
72	KAZE	LSS								
















73	KAZE	ORB								
74	KAZE	VGG								
75	KAZE	SIFT								
76	KAZE	SURF								
77	MSD	BOOST								
78	MSD	BRIEF								
79	MSD	BRISK								
80	MSD	DAISY								






81	MSD	FREAK								
82	MSD	HOG								
83	MSD	LATCH								
84	MSD	LSS								
85	MSD	ORB								
86	MSD	VGG								
87	MSD	SIFT								
88	MSD	SURF								



89	MSER	BOOST								
90	MSER	BRIEF								
91	MSER	BRISK								
92	MSER	DAISY								
93	MSER	FREAK								
94	MSER	HOG								
95	MSER	LATCH								
96	MSER	LSS								



97	MSER	ORB								
98	MSER	VGG								
99	MSER	SIFT								
100	MSER	SURF								
101	ORB	BOOST								
102	ORB	BRIEF								
103	ORB	BRISK								
104	ORB	DAISY								



105	ORB	FREAK								
106	ORB	HOG								
107	ORB	LATCH								
108	ORB	LSS								
109	ORB	ORB								
110	ORB	VGG								
111	ORB	SIFT								
112	ORB	SURF								



113	SIFT	BOOST								
114	SIFT	BRIEF								
115	SIFT	BRISK								
116	SIFT	DAISY								
117	SIFT	FREAK								
118	SIFT	HOG								
119	SIFT	LATCH								
120	SIFT	LSS								







































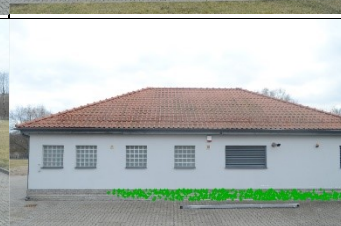



























121	SIFT	VGG								
122	SIFT	SIFT								
123	SIFT	SURF								
124	STAR	BOOST								
125	STAR	BRIEF								
126	STAR	BRISK								
127	STAR	DAISY								
128	STAR	FREAK								



























129	STAR	HOG								
130	STAR	LATCH								
131	STAR	LSS								
132	STAR	ORB								
133	STAR	VGG								
134	STAR	SIFT								
135	STAR	SURF								
136	SURF	BOOST								



137	SURF	BRIEF								
138	SURF	BRISK								
139	SURF	DAISY								
140	SURF	FREAK								
141	SURF	HOG								
142	SURF	LATCH								
143	SURF	LSS								
144	SURF	ORB								



145	SURF	VGG								
146	SURF	SIFT								
147	SURF	SURF								
	(a)	(b)	(c)		(d)		(e)		(f)	



**Table S6.** The results of image matching for shorter elevation.

Elevation 3								
DETECTOR	DESCRIPTOR	IMG1 NO. OF KEYPOINTS	IMG 2 NO. OF KEYPOINTS	DET TIME [s]	DESC TIME [s]	DET TIME [s]	DESC TIME [s]	MATCHES
AGAST	BOOST	43878	45040	0.109	0.579	0.093	0.579	5
AGAST	BRIEF	43878	45040	0.094	0.141	0.11	0.14	121
AGAST	BRISK	43878	45040	0.093	0.375	0.093	0.391	118
AGAST	DAISY	43878	45040	0.094	2.562	0.094	2.703	145
AGAST	FREAK	43878	45040	0.094	0.375	0.094	0.375	47
AGAST	HOG	43878	45040	0.093	1.016	0.109	1.047	4
AGAST	LATCH	43878	45040	0.094	1.593	0.109	1.625	146
AGAST	LSS	43878	45040	0.094	1373.547	0.094	1865.359	64
AGAST	ORB	43878	45040	0.094	0.172	0.094	0.172	140
AGAST	VGG	43878	45040	0.094	5.406	0.109	5.672	168
AGAST	SIFT	43878	45040	0.109	0.938	0.109	0.938	112
AGAST	SURF	43878	45040	0.094	0.359	0.094	0.109	5
AKAZE	AKAZE	15151	16509	1.891	1.687	1.906	1.688	32
AKAZE	BOOST	15151	16509	1.906	0.219	1.921	0.235	6
AKAZE	BRIEF	15151	16509	1.875	0.093	1.906	0.109	18
AKAZE	BRISK	15151	16509	1.875	0.187	1.922	0.203	22
AKAZE	DAISY	15151	16509	1.906	2.516	1.922	2.687	23
AKAZE	FREAK	15151	16509	1.891	0.234	1.906	0.219	25
AKAZE	HOG	15151	16509	1.906	0.375	1.891	0.422	4
AKAZE	KAZE	15151	16509	1.922	7.906	1.906	8.047	31
AKAZE	LATCH	15151	16509	1.875	0.594	1.891	0.64	24
AKAZE	LSS	15151	16509	1.891	515.797	1.922	562.578	11
AKAZE	ORB	15151	16509	1.922	0.312	1.907	0.312	30
AKAZE	VGG	15151	16509	1.89	2	1.906	2.14	35
AKAZE	SIFT	15151	16509	1.907	0.672	1.89	0.688	46
AKAZE	SURF	15151	16509	1.875	0.078	1.891	0.078	16
BRISK	BOOST	20124	21088	0.422	0.297	0.438	0.312	7
BRISK	BRIEF	20124	21088	0.406	0.125	0.421	0.125	21
BRISK	BRISK	20124	21088	0.406	0.282	0.422	0.281	37
BRISK	DAISY	20124	21088	0.406	2.5	0.422	2.672	10
BRISK	FREAK	20124	21088	0.406	0.313	0.422	0.297	25
BRISK	LATCH	20124	21088	0.406	0.781	0.437	0.813	18
BRISK	LSS	20124	21088	0.406	750.797	0.421	694	5
BRISK	ORB	20124	21088	0.391	0.359	0.406	0.36	49
BRISK	VGG	20124	21088	0.39	2.547	0.422	3.391	23
BRISK	SIFT	20124	21088	0.407	0.718	0.422	0.688	22
BRISK	SURF	20124	21088	0.391	0.203	0.422	0.203	13
FAST	BOOST	39870	40318	0.032	0.546	0.031	0.547	6
FAST	BRIEF	39870	40318	0.015	0.125	0.016	0.125	60
FAST	BRISK	39870	40318	0.016	0.359	0.031	0.344	57
FAST	DAISY	39870	40318	0.016	2.515	0.015	2.656	82
FAST	FREAK	39870	40318	0.015	0.422	0.031	0.344	37
FAST	HOG	39870	40318	0.015	0.954	0.031	0.969	4
FAST	LATCH	39870	40318	0.031	1.469	0.031	1.485	106



FAST	LSS	39870	40318	0.016	1260.64	0.015	1228.25	42
FAST	ORB	39870	40318	0.016	0.156	0.015	0.157	95
FAST	VGG	39870	40318	0.031	4.922	0.016	5	94
FAST	SIFT	39870	40318	0.015	0.719	0.016	0.718	80
FAST	SURF	39870	40318	0.031	0.094	0.031	0.094	5
GFTT	BOOST	1000	1000	1.032	0.62	1	0.078	5
GFTT	BRIEF	1000	1000	1.015	0.063	1.016	0.047	13
GFTT	BRISK	1000	1000	0.703	0.047	0.703	0.047	9
GFTT	DAISY	1000	1000	0.703	2.344	0.688	2.515	7
GFTT	FREAK	1000	1000	1.157	0.187	1.188	0.14	8
GFTT	HOG	1000	1000	0.719	0.016	0.719	0.031	4
GFTT	LATCH	1000	1000	0.719	0.078	0.703	0.047	11
GFTT	LSS	1000	1000	0.703	30.969	0.704	30.609	5
GFTT	ORB	1000	1000	0.703	0.125	0.719	0.125	13
GFTT	VGG	1000	1000	0.719	0.188	0.703	0.203	12
GFTT	SIFT	1000	1000	0.687	0.438	0.703	0.438	11
GFTT	SURF	1000	1000	1.437	0.063	1.765	0.079	4
KAZE	AKAZE	19480	19479	9.484	1.656	9.546	1.657	22
KAZE	BOOST	19480	19479	9.468	0.282	9.578	0.281	7
KAZE	BRIEF	19480	19479	9.516	0.109	9.531	0.11	13
KAZE	BRISK	19480	19479	9.422	0.234	9.594	0.219	13
KAZE	DAISY	19480	19479	9.469	2.5	9.453	2.718	17
KAZE	FREAK	19480	19479	9.235	0.281	9.25	0.25	12
KAZE	HOG	19480	19479	9.172	0.484	9.219	0.485	5
KAZE	KAZE	19480	19479	10.047	7.985	9.797	8	21
KAZE	LATCH	19480	19479	9.875	0.75	9.813	0.75	26
KAZE	LSS	19480	19479	9.718	641.563	9.828	651.859	9
KAZE	ORB	19480	19479	9.781	0.312	9.688	0.312	16
KAZE	VGG	19480	19479	9.719	2.422	9.703	2.469	36
KAZE	SIFT	19480	19479	9.516	0.671	9.469	0.687	23
KAZE	SURF	19480	19479	9.312	0.094	9.266	0.078	7
MSD	BOOST	9143	9877	3.75	0.141	3.953	0.156	5
MSD	BRIEF	9143	9877	3.703	0.062	3.89	0.079	6
MSD	BRISK	9143	9877	4	0.156	3.984	0.156	7
MSD	DAISY	9143	9877	3.937	2.453	4.047	2.609	5
MSD	FREAK	9143	9877	3.703	0.188	4.063	0.172	7
MSD	HOG	9143	9877	3.969	0.281	4.047	0.328	4
MSD	LATCH	9143	9877	4.047	0.36	4.016	0.39	5
MSD	LSS	9143	9877	3.828	283.86	3.828	309.25	5
MSD	ORB	9143	9877	4	0.266	4.125	0.125	6
MSD	VGG	9143	9877	4.203	1.219	3.922	1.344	10
MSD	SIFT	9143	9877	3.953	4.844	4.078	5.406	11
MSD	SURF	9143	9877	4.016	0.391	4.688	0.453	6
MSER	BOOST	2747	3670	2.14	0.047	1.985	0.062	5
MSER	BRIEF	2747	3670	2.125	0.047	1.953	0.047	5
MSER	BRISK	2747	3670	2.125	0.062	2.375	0.14	7
MSER	DAISY	2747	3670	2.125	2.344	1.953	2.516	4
MSER	FREAK	2747	3670	2.156	0.109	1.937	0.094	8
MSER	HOG	2747	3670	2.187	0.11	1.984	0.125	0



MSER	LATCH	2747	3670	2.172	0.11	1.984	0.141	4
MSER	LSS	2747	3670	2.171	82.5	2	113.172	4
MSER	ORB	2747	3670	2.203	0.109	2	0.109	7
MSER	VGG	2747	3670	2.219	0.438	1.985	0.578	5
MSER	SIFT	2747	3670	2.187	2.797	2.015	2.438	4
MSER	SURF	2747	3670	2.172	0.234	2	0.14	6
ORB	BOOST	5000	5000	0.078	0.078	0.078	0.078	6
ORB	BRIEF	5000	5000	0.093	0.047	0.078	0.047	8
ORB	BRISK	5000	5000	0.078	0.11	0.079	0.109	12
ORB	DAISY	5000	5000	0.078	2.406	0.078	2.532	10
ORB	FREAK	5000	5000	0.094	0.14	0.078	0.125	15
ORB	HOG	5000	5000	0.078	0.235	0.079	0.234	5
ORB	LATCH	5000	5000	0.078	0.234	0.078	0.219	17
ORB	LSS	5000	5000	0.078	467.25	0.079	164.703	5
ORB	ORB	5000	5000	0.078	0.36	0.079	0.375	10
ORB	VGG	5000	5000	0.078	0.734	0.078	0.719	12
ORB	SIFT	5000	5000	0.078	0.906	0.093	0.891	9
ORB	SURF	5000	5000	0.078	0.156	0.078	0.156	20
SIFT	BOOST	5000	5000	2.828	0.078	2.875	0.078	6
SIFT	BRIEF	5000	5000	2.937	0.047	3.015	0.047	7
SIFT	BRISK	5000	5000	2.968	0.079	2.969	0.094	6
SIFT	DAISY	5000	5000	2.985	2.453	2.984	2.594	6
SIFT	FREAK	5000	5000	2.985	0.14	2.969	0.125	6
SIFT	HOG	5000	5000	2.938	0.125	2.969	0.109	4
SIFT	LATCH	5000	5000	2.969	0.203	3	0.203	14
SIFT	LSS	5000	5000	2.891	161	2.922	153.297	5
SIFT	VGG	5000	5000	2.922	0.687	2.922	0.719	12
SIFT	SIFT	5000	5000	2.89	2.391	2.953	2.359	13
SIFT	SURF	5000	5000	2.953	0.063	2.906	0.063	4
STAR	BOOST	3792	3423	2.609	0.063	2.594	0.062	5
STAR	BRIEF	3792	3423	2.688	0.047	2.61	0.047	7
STAR	BRISK	3792	3423	2.485	0.062	2.484	0.063	5
STAR	DAISY	3792	3423	2.468	2.407	2.782	2.547	6
STAR	FREAK	3792	3423	2.406	0.125	2.469	0.109	5
STAR	HOG	3792	3423	2.641	0.078	2.735	0.078	4
STAR	LATCH	3792	3423	2.578	0.156	2.578	0.141	8
STAR	LSS	3792	3423	2.5	119.719	2.485	109	5
STAR	ORB	3792	3423	2.438	0.109	2.453	0.109	7
STAR	VGG	3792	3423	2.578	0.531	2.547	0.515	8
STAR	SIFT	3792	3423	2.563	0.5	2.547	0.484	7
STAR	SURF	3792	3423	2.578	0.031	2.578	0.047	5
SURF	BOOST	54635	56020	0.547	0.859	0.563	0.812	17
SURF	BRIEF	54635	56020	0.562	0.313	0.562	0.313	194
SURF	BRISK	54635	56020	0.547	0.969	0.562	1	175
SURF	DAISY	54635	56020	0.516	2.562	0.562	2.891	194
SURF	FREAK	54635	56020	0.547	0.953	0.563	0.937	162
SURF	HOG	54635	56020	0.547	2.203	0.547	2.031	49
SURF	LATCH	54635	56020	0.578	2.234	0.625	2.281	148
SURF	LSS	54635	56020	0.609	1756.485	0.61	2133.015	95



SURF	ORB	54635	56020	0.672	0.375	0.657	0.39	213
SURF	VGG	54635	56020	0.656	7.828	0.641	8.141	185
SURF	SIFT	54635	56020	0.641	5.984	0.656	6.156	123
SURF	SURF	54635	56020	0.672	0.75	0.641	0.781	224

**Table S7.** The results of image matching for longer elevation.

Elevation 4								
DETECTOR	DESCRIPTOR	IMG1 NO. OF KEYPOINTS	IMG 2 NO. OF KEYPOINTS	DET. TIME [s]	DESC. TIME [s]	DET. TIME [s]	DESC. TIME [s]	MATCHES
AGAST	BOOST	67536	96218	0.109	0.969	0.140	1.360	69
AGAST	BRIEF	67536	96218	0.125	0.171	0.157	0.234	840
AGAST	BRISK	67536	96218	0.125	0.562	0.156	0.797	604
AGAST	DAISY	31097	38848	0.031	0.516	0.032	0.546	211
AGAST	FREAK	67536	96218	0.125	0.532	0.156	0.703	309
AGAST	HOG	67536	96218	0.125	1.688	0.156	2.407	6
AGAST	LATCH	67536	96218	0.110	2.390	0.157	3.453	855
AGAST	LSS	67536	96218	0.125	2015.031	0.156	2956.234	628
AGAST	ORB	67536	96218	0.125	0.172	0.156	0.203	843
AGAST	VGG	67536	96218	0.125	8.219	0.157	12.172	867
AGAST	SIFT	67536	96218	0.125	1.650	0.156	2.172	933
AGAST	SURF	67536	96218	0.125	0.312	0.171	0.204	102
AKAZE	AKAZE	11769	15175	1.829	1.640	1.875	1.641	234
AKAZE	BOOST	11769	15175	1.875	0.172	1.875	0.219	11
AKAZE	BRIEF	11769	15175	1.859	0.078	1.890	0.094	174
AKAZE	BRISK	11769	15175	1.859	0.156	1.860	0.187	233
AKAZE	DAISY	11769	15175	1.860	2.468	1.843	2.594	224
AKAZE	FREAK	11769	15175	1.828	0.203	1.859	0.204	197
AKAZE	HOG	11769	15175	1.834	0.313	1.859	0.360	7
AKAZE	KAZE	11769	15175	1.844	7.406	1.875	7.515	289
AKAZE	LATCH	11769	15175	1.860	0.453	1.875	0.593	233
AKAZE	LSS	11769	15175	1.906	387.938	1.922	487.093	186
AKAZE	ORB	11769	15175	1.860	0.312	1.890	0.313	157
AKAZE	VGG	11769	15175	1.860	1.500	1.859	1.922	269
AKAZE	SIFT	11769	15175	1.860	0.640	1.875	0.640	296
AKAZE	SURF	11769	15175	1.875	0.312	1.875	0.062	165
BRISK	BOOST	15516	24700	0.344	0.265	0.453	0.407	8
BRISK	BRIEF	15516	24700	0.328	0.094	0.438	0.125	10
BRISK	BRISK	15516	24700	0.344	0.203	0.437	0.313	25
BRISK	DAISY	15516	24700	0.344	2.500	0.453	2.703	46
BRISK	FREAK	15516	24700	0.328	0.281	0.453	0.343	25
BRISK	LATCH	15516	24700	0.328	0.640	0.438	1.015	28
BRISK	LSS	15516	24700	0.344	512.937	0.453	821.313	35
BRISK	ORB	15516	24700	0.344	0.344	0.438	0.359	30
BRISK	VGG	15516	24700	0.328	2.016	0.437	6.094	56
BRISK	SIFT	15516	24700	0.344	0.765	0.453	0.922	37
BRISK	SURF	15516	24700	0.344	0.140	0.437	0.203	21
FAST	BOOST	59194	85526	0.016	0.844	0.016	1.203	56
FAST	BRIEF	59194	85526	0.015	0.156	0.032	0.218	564



FAST	BRISK	59194	85526	0.031	0.500	0.031	0.719	425
FAST	DAISY	59194	85526	0.015	2.516	0.032	2.734	536
FAST	FREAK	59194	85526	0.016	0.484	0.032	0.640	321
FAST	HOG	59194	85526	0.016	1.391	0.031	1.984	7
FAST	LATCH	59194	85526	0.150	2.063	0.016	3.047	628
FAST	LSS	59194	85526	0.015	1783.860	0.031	2559.500	424
FAST	ORB	59194	85526	0.016	0.172	0.031	0.187	621
FAST	VGG	59194	85526	0.016	7.688	0.031	10.625	581
FAST	SIFT	59194	85526	0.016	1.438	0.031	1.828	558
FAST	SURF	59194	85526	0.016	0.125	0.031	0.188	17
GFTT	BOOST	1000	1000	0.719	0.016	0.719	0.031	5
GFTT	BRIEF	1000	1000	0.704	0.046	0.718	0.032	10
GFTT	BRISK	1000	1000	0.703	0.047	0.719	0.047	5
GFTT	DAISY	1000	1000	0.703	2.359	0.812	2.516	8
GFTT	FREAK	1000	1000	0.719	0.094	0.718	0.094	7
GFTT	HOG	1000	1000	0.750	0.016	0.734	0.032	5
GFTT	LATCH	1000	1000	0.750	0.046	0.750	0.063	10
GFTT	LSS	1000	1000	0.734	29.625	0.734	30.985	7
GFTT	ORB	1000	1000	0.750	0.109	0.735	0.125	7
GFTT	VGG	1000	1000	0.750	0.203	0.750	0.219	5
GFTT	SIFT	1000	1000	0.750	0.453	0.750	0.437	6
GFTT	SURF	1000	1000	0.750	0.031	0.750	0.032	4
KAZE	AKAZE	10744	14411	8.953	1.625	9.171	1.922	190
KAZE	BOOST	10744	14411	9.046	0.157	9.078	0.219	26
KAZE	BRIEF	10744	14411	9.204	0.078	9.016	0.093	192
KAZE	BRISK	10744	14411	9.000	0.141	9.078	0.172	237
KAZE	DAISY	10744	14411	9.250	2.421	9.015	2.610	208
KAZE	FREAK	10744	14411	9.110	0.187	9.062	0.203	174
KAZE	HOG	10744	14411	9.031	0.250	9.062	0.375	8
KAZE	KAZE	10744	14411	9.078	7.485	9.125	7.469	239
KAZE	LATCH	10744	14411	9.016	0.422	9.109	0.547	186
KAZE	LSS	10744	14411	9.125	349.078	9.797	457.734	187
KAZE	ORB	10744	14411	8.969	0.297	9.015	0.297	212
KAZE	VGG	10744	14411	9.078	2.797	9.016	1.906	260
KAZE	SIFT	10744	14411	9.047	0.640	9.015	0.672	250
KAZE	SURF	10744	14411	9.484	0.063	9.578	0.063	130
MSD	BOOST	4444	7005	4.469	0.078	4.000	0.109	7
MSD	BRIEF	4444	7005	3.750	0.047	3.906	0.063	6
MSD	BRISK	4444	7005	4.000	0.790	3.938	0.125	6
MSD	DAISY	4444	7005	4.047	2.437	4.328	2.609	7
MSD	FREAK	4444	7005	3.890	0.141	4.094	0.141	10
MSD	HOG	4444	7005	3.735	0.156	3.938	0.219	5
MSD	LATCH	4444	7005	3.812	0.188	4.016	0.281	7
MSD	LSS	4444	7005	3.844	139.109	3.765	223.219	7
MSD	ORB	4444	7005	4.000	0.125	4.047	0.125	5
MSD	VGG	4444	7005	3.859	0.641	4.188	0.937	12
MSD	SIFT	4444	7005	3.828	4.454	4.031	4.188	10
MSD	SURF	4444	7005	4.093	0.407	4.094	0.390	5
MSER	BOOST	1609	2187	1.640	0.031	1.266	0.047	32



MSER	BRIEF	1609	2187	1.625	0.047	1.281	0.047	75
MSER	BRISK	1609	2187	1.609	0.047	1.234	0.047	60
MSER	DAISY	1609	2187	1.594	2.406	1.218	2.563	64
MSER	FREAK	1609	2187	1.594	0.109	1.235	0.093	60
MSER	HOG	1609	2187	1.578	0.063	1.234	0.141	39
MSER	LATCH	1609	2187	1.593	0.063	1.218	0.094	90
MSER	LSS	1609	2187	1.594	50.250	1.250	69.172	67
MSER	ORB	1609	2187	1.656	0.125	1.297	0.110	79
MSER	VGG	1609	2187	1.579	0.265	1.266	0.359	74
MSER	SIFT	1609	2187	1.609	0.969	1.281	1.000	83
MSER	SURF	1609	2187	1.609	0.047	1.282	0.047	67
ORB	BOOST	5000	5000	0.078	0.094	0.078	0.094	9
ORB	BRIEF	5000	5000	0.062	0.063	0.078	0.063	10
ORB	BRISK	5000	5000	0.079	0.109	0.078	0.110	25
ORB	DAISY	5000	5000	0.079	2.421	0.078	2.594	15
ORB	FREAK	5000	5000	0.062	0.172	0.078	0.141	17
ORB	HOG	5000	5000	0.078	0.235	0.078	0.219	9
ORB	LATCH	5000	5000	0.078	0.203	0.093	0.204	10
ORB	LSS	5000	5000	0.078	156.766	0.078	169.250	7
ORB	ORB	5000	5000	0.078	0.359	0.094	0.359	15
ORB	VGG	5000	5000	0.078	0.734	0.078	0.719	15
ORB	SIFT	5000	5000	0.078	0.891	0.078	0.891	15
ORB	SURF	5000	5000	0.078	0.156	0.078	0.156	14
SIFT	BOOST	5001	5000	2.875	0.094	2.891	0.078	8
SIFT	BRIEF	5001	5000	2.844	0.063	2.906	0.063	7
SIFT	BRISK	5001	5000	2.953	0.079	2.953	0.078	6
SIFT	DAISY	5001	5000	2.907	2.453	2.922	2.594	9
SIFT	FREAK	5001	5000	2.937	0.141	2.937	0.125	7
SIFT	HOG	5001	5000	2.937	0.141	2.954	0.125	4
SIFT	LATCH	5001	5000	2.859	0.204	2.891	0.203	14
SIFT	LSS	5001	5000	2.907	155.687	2.953	160.422	6
SIFT	VGG	5001	5000	3.000	0.703	2.969	0.703	10
SIFT	SIFT	5001	5000	2.985	2.375	3.000	2.422	8
SIFT	SURF	5001	5000	2.953	0.140	2.985	0.125	5
STAR	BOOST	1215	2381	2.500	0.031	2.546	0.047	6
STAR	BRIEF	1215	2381	2.515	0.047	2.500	0.047	6
STAR	BRISK	1215	2381	2.515	0.047	2.500	0.047	7
STAR	DAISY	1215	2381	2.469	2.421	2.500	2.594	8
STAR	FREAK	1215	2381	2.516	0.109	2.500	0.109	7
STAR	HOG	1215	2381	2.547	0.031	2.547	0.062	4
STAR	LATCH	1215	2381	2.469	0.063	2.515	0.110	12
STAR	LSS	1215	2381	2.484	40.735	2.750	81.344	10
STAR	ORB	1215	2381	2.610	0.125	2.610	0.109	8
STAR	VGG	1215	2381	2.641	0.234	2.594	0.375	10
STAR	SIFT	1215	2381	2.641	0.500	2.687	0.500	10
STAR	SURF	1215	2381	2.594	0.031	2.625	0.047	5
SURF	BOOST	56077	64255	0.531	0.907	0.547	1.016	360
SURF	BRIEF	56077	64255	0.547	0.313	0.578	0.375	1897
SURF	BRISK	56077	64255	0.563	0.953	0.594	1.094	2100



SURF	DAISY	56077	64255	0.578	2.640	0.657	2.859	1847
SURF	FREAK	56077	64255	0.594	1.000	0.578	1.109	1966
SURF	HOG	56077	64255	0.562	1.844	0.563	2.141	687
SURF	LATCH	56077	64255	0.547	2.250	0.594	2.562	1611
SURF	LSS	56077	64255	0.594	1948.172	0.672	2236.360	1550
SURF	ORB	56077	64255	0.578	0.375	0.610	0.375	1404
SURF	VGG	56077	64255	0.578	7.516	0.625	8.625	1986
SURF	SIFT	56077	64255	0.578	5.984	0.579	6.781	1991
SURF	SURF	56077	64255	0.594	0.641	0.609	0.766	2195