Part I. Statistics details on the DAVIS 2016

Table 1 Statistics of our method on 50 video sequences and region similarity J and contour accuracy F (%)

Video sequences	J			F			Total number of frames	Total time (s)	Time per frame (s/f)
	Mean	Recall	Decay	Mean	Recall	Decay			
bear	0.862	1.000	-0.054	0.770	1.000	-0.081	82	24.14	0.29
blackswan	0.939	1.000	0.005	0.964	1.000	0.006	50	16.13	0.32
bmx-bumps	0.511	0.622	0.58	0.769	0.844	0.539	90	31.98	0.36
bmx-trees	0.295	0.038	0.025	0.676	0.975	0.030	80	28.37	0.35
boat	0.620	1.000	-0.097	0.623	1.000	-0.097	75	28.38	0.38
breakdance	0.671	0.893	0.013	0.653	0.905	0.020	84	47.73	0.57
breakdance-flare	0.826	1.000	0.095	0.890	1.000	0.064	71	25.31	0.36
bus	0.867	1.000	0.084	0.747	1.000	-0.104	80	33.48	0.42
camel	0.825	1.000	0.032	0.811	1.000	0.002	90	30.11	0.33
car-roundabout	0.877	1.000	0.014	0.777	1.000	0.015	75	38.05	0.51
car-shadow	0.741	0.825	0.294	0.631	0.825	0.188	40	17.89	0.45
car-turn	0.863	1.000	-0.016	0.764	1.000	0.080	80	23.42	0.29
cows	0.724	1.000	-0.024	0.511	0.635	0.013	104	40.6	0.39
dance-jump	0.807	1.000	0.101	0.617	0.897	0.105	60	21.12	0.35
dance-twirl	0.651	0.978	0.017	0.651	0.911	0.168	90	59.67	0.66
dog	0.838	1.000	0.041	0.747	1.000	0.109	60	19.77	0.33
dog-agility	0.827	1.000	0.027	0.696	0.960	0.195	25	18.79	0.75
drift-chicane	0.514	0.654	-0.420	0.587	0.712	-0.114	52	15.71	0.30
drift-straight	0.605	0.780	-0.015	0.423	0.160	0.172	50	35.25	0.71
drift-turn	0.689	0.844	-0.282	0.484	0.313	0.103	64	40.62	0.63
elephant	0.766	1.000	-0.019	0.541	0.763	-0.098	80	27.23	0.34
flamingo	0.834	1.000	0.002	0.904	1.000	-0.006	80	20.91	0.26
goat	0.496	0.600	0.380	0.514	0.533	0.177	90	45.31	0.50
hike	0.872	1.000	-0.087	0.893	1.000	-0.087	80	23.5	0.29
hockey	0.859	1.000	-0.033	0.915	1.000	-0.011	75	27.09	0.36
horsejump-high	0.865	1.000	0.058	0.910	1.000	0.024	50	25.28	0.51
horsejump-low	0.486	0.667	0.629	0.536	0.700	0.579	60	40.52	0.68
kite-surf	0.642	0.840	0.108	0.547	0.600	-0.049	50	16.43	0.33
kite-walk	0.855	1.000	0.031	0.688	1.000	0.036	80	18.39	0.23
libby	0.620	0.796	0.357	0.779	1.000	0.165	49	15.61	0.32
lucia	0.900	1.000	-0.071	0.906	1.000	-0.057	70	28.28	0.40
mallard-fly	0.593	0.657	0.632	0.637	0.657	0.624	70	23.65	0.34
mallard-water	0.793	1.000	-0.071	0.749	1.000	-0.120	80	25.31	0.32
motocross-bumps	0.773	0.881	-0.317	0.781	0.983	0.042	60	21.22	0.35
motocross-jump	0.790	1.000	-0.031	0.663	0.775	-0.133	40	18.34	0.46

Video sequences	*J*			*F*			Total number of frames	Total time (s)	Time per frame (s/f)
	Mean	**Recall**	**Decay**	**Mean**	**Recall**	**Decay**			
motorbike	0.679	1.000	0.168	0.833	1.000	0.167	43	20.31	0.47
paragliding	0.931	1.000	0.026	0.868	1.000	0.095	70	15.63	0.22
paragliding-launch	0.693	0.980	0.148	0.458	0.300	0.180	80	18.93	0.24
parkour	0.859	1.000	-0.069	0.783	1.000	0.043	100	30.08	0.30
rhino	0.837	1.000	0.041	0.725	1.000	-0.041	90	29.51	0.33
rollerblade	0.748	1.000	-0.153	0.834	1.000	-0.067	35	20.79	0.59
scooter-black	0.722	1.000	0.003	0.645	0.954	0.020	43	36.23	0.84
scooter-gray	0.354	0.107	-0.159	0.462	0.333	-0.226	75	43.36	0.58
soapbox	0.828	1.000	-0.022	0.804	1.000	0.065	99	39.4	0.40
soccerball	0.867	1.000	-0.063	0.920	1.000	-0.047	70	28.63	0.41
stroller	0.826	1.000	-0.026	0.877	1.000	0.022	91	36.33	0.40
surf	0.811	0.927	0.318	0.737	1.000	0.267	55	17.62	0.32
swing	0.806	1.000	0.009	0.744	1.000	0.005	60	22.49	0.37
tennis	0.786	1.000	-0.009	0.820	1.000	0.009	70	19.27	0.28
train	0.819	1.000	0.000	0.718	1.000	0.011	80	43.59	0.54
Average	**0.745**	**0.902**	**0.044**	**0.720**	**0.875**	**0.060**	**-**	**-**	**0.41**

Part II. Statistics details on the YouTube-Objects dataset

Table 1 Statistics of our method on 88 video sequences of 10 object categories and region similarity J (%)

Categories	Sequence	J Mean	Average	Total number of frames	Total time (s)	Time per frame (s/f)
Aeroplane (5)	0001	0.809	0.817	61	8.19	0.13
	0002	0.814		90	11.58	0.13
	0010	0.825		124	15.82	0.13
	0011	0.799		15	5.47	0.36
	0012	0.840		401	16.89	0.04
Bird (6)	0001	0.821	0.820	201	14.16	0.07
	0007	0.857		201	28.63	0.14
	0010	0.692		201	21.34	0.11
	0011	0.866		201	12.43	0.06
	0012	0.903		201	23.5	0.12
	0014	0.780		201	36.36	0.18
Boat (13)	0001	0.909	0.780	201	26.98	0.13
	0003	0.915		201	12.28	0.06
	0005	0.575		201	17.9	0.09
	0007	0.738		201	49.51	0.25
	0008	0.837		116	24.49	0.21
	0009	0.718		66	28	0.42
	0010	0.762		156	13.34	0.09
	0011	0.823		105	17.26	0.16
	0012	0.663		186	38.31	0.21
	0014	0.846		9	9.11	1.01
	0015	0.787		201	18.81	0.09
	0016	0.727		109	22.13	0.20
	0017	0.837		201	16.66	0.08
Cat (14)	0001	0.858	0.695	100	48.36	0.48
	0004	0.849		313	18.73	0.06
	0006	0.935		401	43.2	0.11
	0008	0.687		246	57	0.23
	0010	0.711		401	23.89	0.06
	0011	0.738		401	39.74	0.10
	0012	0.920		401	23.95	0.06
	0013	0.549		401	22.48	0.06
	0014	0.145		236	50.22	0.21
	0015	0.751		239	21.32	0.09
	0016	0.148		244	33.12	0.14
	0017	0.808		125	46.59	0.37
	0018	0.882		53	8.86	0.17
	0020	0.748		261	26.47	0.10

Categories	Sequence	J Mean	Average	Total number of frames	Total time (s)	Time per frame (s/f)
Car (4)	0002	0.905	0.907	93	30.57	0.33
	0003	0.944		36	9.47	0.26
	0004	0.924		71	32.13	0.45
	0009	0.856		134	12.31	0.09
Cow (9)	0003	0.798	0.833	201	15.17	0.08
	0005	0.849		201	25.82	0.13
	0006	0.846		201	26.12	0.13
	0009	0.893		175	32.19	0.18
	0011	0.894		170	31.75	0.19
	0014	0.939		9	5.22	0.58
	0015	0.690		10	5.94	0.59
	0016	0.847		201	25.86	0.13
	0022	0.738		141	21.66	0.15
Dog (19)	0003	0.860	0.755	58	32.85	0.57
	0005	0.926		72	11.72	0.16
	0006	0.230		201	31.65	0.16
	0008	0.694		160	40.61	0.25
	0010	0.921		201	26.97	0.13
	0012	0.702		201	29.7	0.15
	0013	0.760		201	39.6	0.20
	0020	0.623		201	26.22	0.13
	0021	0.756		153	13.45	0.09
	0022	0.789		133	40.48	0.30
	0023	0.624		201	40.8	0.20
	0025	0.642		201	14.8	0.07
	0026	0.872		150	11.15	0.07
	0027	0.942		82	9.05	0.11
	0028	0.657		201	44.09	0.22
	0031	0.792		201	18.17	0.09
	0034	0.880		201	17.16	0.09
	0035	0.856		201	19.08	0.09
	0036	0.923		90	11	0.12
Horse (7)	0009	0.430	0.725	401	19.97	0.05
	0011	0.660		289	54.21	0.19
	0012	0.743		119	15.82	0.13
	0014	0.822		151	26.55	0.18
	0024	0.902		157	22.51	0.14
	0025	0.772		61	11	0.18
	0026	0.751		201	23.52	0.12

Categories	Sequence	J Mean	Average	Total number of frames	Total time (s)	Time per frame (s/f)
Motorbike (6)	0001	0.709	0.681	19	7.7	0.41
	0003	0.433		45	15.33	0.34
	0006	0.807		94	10.41	0.11
	0009	0.815		201	34.49	0.17
	0013	0.593		201	62.23	0.31
	0014	0.729		108	19.67	0.18
Train (5)	0001	0.786	0.795	201	22.6	0.11
	0003	0.861		83	13.76	0.17
	0008	0.747		201	33.59	0.17
	0024	0.971		56	23.51	0.42
	0025	0.610		201	23.42	0.12
Average			**0.781**	**-**	**-**	**0.19**

Part III. Statistics details on the SegTrack v2 dataset

Table 1 Statistics of our method on 14 video sequences, including 24 objects, and region similarity J (%)

Video sequences	J **Mean**	**Total number of frames**	**Total time (s)**	**Time per frame (s/f)**
bird_of_paradise	0.951	98	10.3	0.10
birdfall	0.628	30	7.2	0.24
bmx_1	0.929	36	6.2	0.17
bmx_2	0.526	36	12.4	0.34
cheetah_1	0.539	29	8.4	0.29
cheetah_2	0.521	29	8.6	0.30
drift_1	0.869	74	30.4	0.41
drift_2	0.771	74	28.7	0.39
frog	0.871	279	12.5	0.04
girl	0.713	21	5.9	0.28
hummingbird_1	0.530	29	8.4	0.29
hummingbird_2	0.720	29	8.6	0.30
monkey	0.851	31	10.1	0.33
monkeydog_1	0.752	71	9.0	0.13
monkeydog_2	0.597	71	9.3	0.13
parachute	0.995	51	6.1	0.12
penguin_1	0.777	42	9.5	0.23
penguin_2	0.804	42	9.6	0.23
penguin_3	0.824	42	9.7	0.23
penguin_4	0.746	42	9.4	0.22
penguin_5	0.743	42	9.3	0.22
penguin_6	0.861	42	9.0	0.22
soldier	0.780	32	7.5	0.23
worm	0.820	244	11.8	0.05
Average	**0.755**	**-**	**-**	**0.23**