

SUPPLEMENTARY TABLE III
AVERAGE LOCALIZATION ERRORS AND RUN TIME USING SRILF TO TARGET DIFFERENT SUBSETS OF LANDMARKS ON FRGCV1

A. Landmark localization errors [mm]						
Landmark	Number of landmarks targeted					
	8	10	11	12	13	14
en	3.73	3.68	3.58	3.58	3.59	3.57
ex	4.93	4.72	4.77	4.76	4.74	4.71
n	—	—	2.80	2.79	2.80	2.76
prn	2.73	2.80	2.80	2.78	2.76	2.77
ac	—	3.20	3.16	3.15	3.13	3.17
sn	—	—	—	2.38	2.37	2.36
ch	3.23	3.23	3.20	3.22	3.21	3.23
ls	—	—	—	—	2.90	2.83
li	—	—	—	—	—	3.82
pg	4.37	4.39	4.33	4.45	4.44	4.24

B. Average run-time [s]						
Descriptors	4.15	4.18	4.20	4.21	5.64	7.05
Combinatorial search	0.54	5.12	8.03	11.80	17.44	24.44
Total	4.70	9.30	12.23	16.00	23.07	31.48

SUPPLEMENTARY TABLE IV
LANDMARK LOCALIZATION ERRORS REPORTED ON THE BOSPHORUS DATABASE, IN TERMS OF MEAN \pm STANDARD DEVIATION. VALUES IN [MM]

A. Frontal scans without occlusions										
Method	Eyes		Nose				Mouth and chin			
	en	ex	n	prn	ac	sn	ch	ls	li	pg
Alyuz et al. [29]	3.70	-	-	3.05	3.10	-	-	-	-	-
	n/a	-	-	n/a	n/a	-	-	-	-	-
Creusot et al. [27]	4.14	6.27	5.10	4.33	4.16	4.07	7.95	5.43	8.95	15.38
	± 2.63	± 3.98	± 3.29	± 2.62	± 2.35	± 2.13	± 5.44	± 3.64	± 9.43	± 10.49
Sukno et al. (SRILF)	2.85	5.06	2.22	2.33	3.02	2.81	6.08	4.00	6.54	7.58
	± 2.02	± 3.67	± 1.91	± 1.78	± 1.91	± 1.53	± 5.13	± 3.01	± 7.47	± 6.72

B. Scans with out-of-plane rotations										
Method	Eyes		Nose				Mouth and chin			
	en	ex	n	prn	ac	sn	ch	ls	li	pg
Creusot et al. [27]	4.56	6.36	6.12	5.50	4.25	4.76	4.86	4.49	5.51	10.92
	± 4.38	± 5.32	± 6.29	± 5.08	± 2.94	± 4.25	± 3.52	± 4.48	± 5.38	± 8.40
Sukno et al. (SRILF)	3.09	4.69	3.40	4.36	3.36	4.19	3.75	3.47	5.01	7.77
	± 1.87	± 3.18	± 2.37	± 3.36	± 2.40	± 2.97	± 3.25	± 3.51	± 4.93	± 6.59

C. Scans with occlusions										
Method	Eyes		Nose				Mouth and chin			
	en	ex	n	prn	ac	sn	ch	ls	li	pg
Creusot et al. [27]	5.13	7.73	5.60	4.73	5.08	4.10	5.14	4.28	5.40	10.83
	± 6.28	± 9.51	± 4.63	± 5.65	± 6.73	± 2.42	± 4.35	± 3.64	± 5.60	± 9.65
Sukno et al. (SRILF)	3.84	6.48	4.12	3.83	4.53	3.76	4.91	3.61	4.81	7.63
	± 4.97	± 8.26	± 4.62	± 5.93	± 6.04	± 6.69	± 8.56	± 7.16	± 8.25	± 12.15
Zhao et al. [36]	6.69	8.35	-	8.39	7.49	-	9.70	9.01	10.61	-
	± 3.91	± 5.61	-	± 3.64	± 3.18	-	± 5.66	± 4.93	± 5.61	-

SUPPLEMENTARY TABLE V

LANDMARK DETECTION RATES (IN PERCENTAGES) ON THE BOSPHORUS DATABASE FOR VARIOUS RADII. BEST RESULTS PER LANDMARK AND RADIUS ARE HIGHLIGHTED IN BLUE.

A. Frontal scans without occlusions											
Method	Radius	Eyes		Nose				Mouth and chin			
		en	ex	n	prn	ac	sn	ch	ls	li	pg
Creusot et al. [27]	10mm	98.68	87.67	93.90	96.08	98.23	98.97	70.90	90.30	74.03	35.68
	12mm	99.55	94.13	97.57	98.75	99.43	99.68	80.37	95.68	82.13	45.16
	15mm	99.86	98.70	99.57	99.61	99.84	99.89	89.88	98.39	88.01	58.71
	20mm	99.91	99.80	99.86	99.96	99.89	99.89	97.31	99.57	90.87	75.76
Sukno et al. (SRILF)	10mm	99.93	93.20	99.28	99.36	99.57	99.79	82.46	95.26	84.27	78.30
	12mm	99.96	96.97	99.93	99.82	99.89	99.93	87.37	97.75	90.08	85.63
	15mm	99.96	99.34	99.96	99.96	99.96	99.96	92.83	99.32	94.01	91.81
	20mm	99.96	99.93	99.96	100.0	99.96	99.96	97.89	99.93	96.54	96.07
B. Scans with out-of-plane rotations											
Method	Radius	Eyes		Nose				Mouth and chin			
		en	ex	n	prn	ac	sn	ch	ls	li	pg
Creusot et al. [27]	10mm	96.70	86.09	89.00	91.85	97.86	96.69	95.18	95.58	91.08	53.15
	12mm	97.99	92.97	94.29	95.75	99.19	98.34	97.24	97.31	95.50	65.41
	15mm	99.38	97.40	98.01	98.79	99.48	99.04	99.10	99.13	98.44	78.90
	20mm	99.64	99.38	98.70	99.39	99.77	99.56	99.70	99.57	99.05	92.22
Sukno et al. (SRILF)	10mm	98.97	94.11	98.27	94.80	99.07	98.17	97.89	97.92	90.91	64.43
	12mm	99.69	97.86	99.13	97.83	99.65	99.48	99.00	99.05	94.55	84.15
	15mm	99.90	99.58	99.65	99.57	99.94	99.83	99.50	99.65	98.18	91.16
	20mm	100.0	99.95	99.83	99.91	99.94	99.91	99.85	99.91	99.22	97.81
C. Scans with occlusions											
Method	Radius	Eyes		Nose				Mouth and chin			
		en	ex	n	prn	ac	sn	ch	ls	li	pg
Creusot et al. [27]	10mm	96.86	82.16	91.76	94.71	94.56	97.55	94.78	96.91	92.78	56.23
	12mm	98.05	88.22	96.43	96.83	97.21	98.47	97.74	97.94	96.03	68.33
	15mm	98.20	95.74	98.08	98.41	98.19	98.77	98.96	98.97	98.56	80.43
	20mm	98.65	98.04	99.18	98.68	98.74	100.0	99.13	99.31	99.28	92.88
Sukno et al. (SRILF)	10mm	97.31	87.89	95.33	94.18	92.89	97.24	95.30	99.31	94.58	79.72
	12mm	98.20	94.44	95.88	94.97	95.12	97.85	97.04	99.31	97.11	88.61
	15mm	98.35	97.55	98.08	96.30	96.51	98.16	98.09	99.31	98.56	94.66
	20mm	98.50	98.36	98.63	97.35	98.61	98.77	98.78	99.31	99.64	97.15