

Additional results for *Anonymous Video Analytics Benchmark*

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This document contains additional results for the draft paper with title *Anonymous Video Analytics Benchmark*. The results contain per-video results of the four baseline algorithms benchmarked in four systems for the task of localization, count, and age and gender estimation.

Table 1: Links to results

System	Inference	Localization	Count	Age	Gender
System 1	GPU	Table 2	Table 8	Table 14	Table 20
	CPU	Table 3	Table 9	Table 15	Table 21
System 2	GPU	Table 4	Table 10	Table 16	Table 22
	CPU	Table 5	Table 11	Table 17	Table 23
System 3	CPU	Table 6	Table 12	Table 18	Table 24
System 4	GPU	Table 7	Table 13	Table 19	Table 25

In addition, we show the results of two commercial solutions for localization (Table 26) and count (Table 27).

Table 2: Localization results running algorithms in **System 1** with **GPU**. KEY – Ax: algorithm x; P: precision; R: recall; F: F1-Score.

Video	Alg.	P	R	F	Recall distance		Recall occlusion			Speed [seconds/frame]
					Close	Far	No	Partial	Heavy	
Airport-1	A1	0.75	0.84	0.79	0.99	0.70	0.85	0.40	0.13	0.0414±0.0129
	A2	0.88	0.62	0.72	0.77	0.46	0.62	0.06	0.00	0.0277±0.0030
	A3	1.00	0.80	0.89	0.98	0.62	0.86	0.30	0.75	0.0845±0.0130
	A4	0.98	0.85	0.91	0.97	0.72	0.92	0.28	0.60	0.0800±0.0006
Airport-2	A1	0.63	0.99	0.77	0.99	0.99	1.00	0.94	0.56	0.1728±0.0195
	A2	0.99	0.50	0.67	0.72	0.29	0.51	0.03	0.01	0.0274±0.0049
	A3	1.00	0.82	0.90	0.97	0.66	0.90	0.20	0.64	0.0828±0.0128
	A4	0.99	0.89	0.93	0.97	0.81	0.97	0.55	0.41	0.0805±0.0009
Airport-3	A1	0.87	0.80	0.83	0.95	0.65	0.84	0.54	0.15	0.0408±0.0099
	A2	0.98	0.47	0.64	0.58	0.37	0.51	0.06	0.01	0.0279±0.0037
	A3	0.99	0.71	0.83	0.95	0.48	0.88	0.37	0.48	0.0876±0.0138
	A4	0.98	0.71	0.82	0.96	0.45	0.89	0.26	0.36	0.0804±0.0008
Airport-4	A1	0.76	0.79	0.77	0.92	0.65	0.81	0.27	0.20	0.0416±0.0129
	A2	0.96	0.44	0.61	0.63	0.26	0.46	0.06	0.00	0.0282±0.0057
	A3	0.97	0.77	0.86	0.94	0.61	0.92	0.39	0.54	0.0835±0.0128
	A4	0.94	0.82	0.88	0.95	0.68	0.97	0.51	0.51	0.0810±0.0008
Mall-1	A1	0.67	0.30	0.42	0.56	0.03	0.32	0.07	-	0.0413±0.0134
	A2	0.81	0.18	0.30	0.35	0.01	0.19	0.02	-	0.0393±0.0036
	A3	0.84	0.38	0.52	0.69	0.07	0.54	0.16	-	0.0923±0.0138
	A4	0.71	0.42	0.53	0.72	0.12	0.62	0.14	-	0.0814±0.0005
Mall-2	A1	0.27	0.98	0.43	0.99	0.97	0.99	0.89	0.83	0.1735±0.0235
	A2	0.92	0.15	0.26	0.30	0.01	0.16	0.01	0.00	0.0391±0.0047
	A3	0.86	0.41	0.56	0.75	0.09	0.59	0.18	0.41	0.0965±0.0146
	A4	0.77	0.45	0.57	0.80	0.12	0.65	0.20	0.22	0.0815±0.0007
Mall-3	A1	0.32	0.97	0.49	0.99	0.95	0.98	0.89	0.63	0.1739±0.0192
	A2	0.91	0.52	0.66	0.83	0.21	0.54	0.07	0.00	0.0446±0.0128
	A3	0.90	0.68	0.77	0.92	0.44	0.82	0.34	0.30	0.0822±0.0126
	A4	0.91	0.76	0.83	0.93	0.58	0.91	0.54	0.23	0.0809±0.0009
Mall-4	A1	0.44	0.91	0.59	0.90	0.92	0.92	0.78	0.64	0.1728±0.0183
	A2	0.95	0.27	0.42	0.38	0.16	0.28	0.07	0.00	0.0465±0.0101
	A3	0.93	0.62	0.74	0.63	0.62	0.68	0.28	0.31	0.0849±0.0121
	A4	0.86	0.68	0.76	0.61	0.75	0.75	0.34	0.36	0.0805±0.0005
Pedestrian-1	A1	0.76	0.52	0.61	0.88	0.15	0.53	0.05	-	0.0419±0.0122
	A2	0.97	0.38	0.55	0.66	0.11	0.40	0.00	-	0.0505±0.0047
	A3	0.99	0.75	0.86	0.92	0.59	0.80	0.34	-	0.0828±0.0117
	A4	0.98	0.74	0.84	0.73	0.75	0.79	0.33	-	0.0811±0.0019
Pedestrian-2	A1	0.62	0.51	0.56	0.81	0.20	0.55	0.05	0.05	0.0421±0.0108
	A2	0.93	0.35	0.51	0.58	0.13	0.38	0.01	0.00	0.0571±0.0032
	A3	0.88	0.55	0.68	0.75	0.36	0.70	0.23	0.18	0.0839±0.0124
	A4	0.86	0.66	0.75	0.77	0.55	0.84	0.28	0.11	0.0813±0.0007
Pedestrian-3	A1	0.39	0.95	0.55	0.97	0.94	0.96	0.88	0.45	0.1736±0.0187
	A2	0.93	0.36	0.52	0.58	0.14	0.37	0.01	0.00	0.0522±0.0067
	A3	1.00	0.87	0.93	0.97	0.78	0.92	0.57	0.63	0.0835±0.0138
	A4	0.99	0.90	0.94	0.95	0.85	0.96	0.53	0.43	0.0808±0.0010
Pedestrian-4	A1	0.38	0.94	0.54	0.99	0.90	0.96	0.84	0.45	0.1755±0.0203
	A2	0.60	0.55	0.57	0.77	0.33	0.58	0.04	0.00	0.0837±0.0059
	A3	0.87	0.72	0.79	0.83	0.63	0.81	0.43	0.53	0.0871±0.0128
	A4	0.86	0.62	0.72	0.58	0.67	0.71	0.26	0.13	0.0808±0.0007
Pedestrian-5	A1	0.88	0.40	0.55	0.74	0.05	0.41	0.25	0.13	0.0401±0.0162
	A2	0.98	0.22	0.36	0.42	0.03	0.25	0.00	0.00	0.0699±0.0076
	A3	0.99	0.72	0.84	0.85	0.59	0.78	0.41	0.47	0.0814±0.0118
	A4	0.99	0.84	0.91	0.93	0.75	0.91	0.43	0.53	0.0813±0.0008
Subway-1	A1	0.84	0.74	0.78	0.94	0.54	0.78	0.64	0.39	0.0414±0.0160
	A2	0.97	0.32	0.48	0.42	0.21	0.36	0.09	0.00	0.0416±0.0045
	A3	0.98	0.70	0.82	0.92	0.51	0.82	0.40	0.45	0.0901±0.0143
	A4	0.85	0.74	0.79	0.92	0.57	0.89	0.35	0.25	0.0809±0.0006
Subway-2	A1	0.55	0.96	0.70	0.99	0.94	0.97	0.89	0.65	0.1753±0.0278
	A2	0.99	0.33	0.50	0.45	0.22	0.35	0.05	0.01	0.0428±0.0034
	A3	0.99	0.58	0.73	0.85	0.33	0.70	0.20	0.41	0.0930±0.0150
	A4	0.96	0.64	0.77	0.88	0.41	0.78	0.21	0.34	0.0809±0.0006
Subway-3	A1	0.68	0.72	0.70	0.87	0.56	0.77	0.52	0.29	0.0459±0.0128
	A2	0.95	0.22	0.36	0.25	0.20	0.24	0.13	0.08	0.0435±0.0049
	A3	0.98	0.61	0.75	0.90	0.40	0.74	0.48	0.61	0.0888±0.0141
	A4	0.97	0.68	0.80	0.90	0.50	0.84	0.49	0.59	0.0813±0.0009
Overall	A1	0.61±0.19	0.77±0.22	0.63±0.13	0.91±0.11	0.63±0.34	0.79±0.21	0.56±0.32	-±-	0.0996±0.0655
	A2	0.92±0.10	0.37±0.13	0.51±0.13	0.54±0.18	0.20±0.12	0.39±0.14	0.04±0.04	-±-	0.0451±0.0150
	A3	0.95±0.06	0.67±0.13	0.78±0.11	0.86±0.11	0.49±0.19	0.78±0.11	0.33±0.11	-±-	0.0866±0.0043
	A4	0.91±0.08	0.71±0.13	0.80±0.11	0.85±0.13	0.58±0.21	0.84±0.11	0.36±0.13	-±-	0.0809±0.0004

Go to Table 1

Table 3: Localization results running algorithms in **System 1** with **CPU**. KEY – Ax: algorithm x; P: precision; R: recall; F: F1-Score.

Video	Alg.	P	R	F	Recall distance		Recall occlusion			Speed [seconds/frame]
					Close	Far	No	Partial	Heavy	
Airport-1	A1	0.50	0.88	0.63	0.99	0.76	0.88	0.52	0.19	0.3925±0.1227
	A2	0.88	0.62	0.73	0.77	0.46	0.62	0.05	0.00	0.1663±0.0160
	A3	1.00	0.79	0.88	0.98	0.60	0.85	0.28	0.73	0.3335±0.0631
	A4	0.98	0.85	0.91	0.97	0.72	0.92	0.28	0.60	2.0116±0.3191
Airport-2	A1	0.66	0.83	0.74	0.99	0.68	0.85	0.43	0.14	0.3637±0.0636
	A2	0.99	0.50	0.67	0.72	0.29	0.51	0.03	0.01	0.1738±0.0218
	A3	1.00	0.81	0.89	0.97	0.65	0.90	0.18	0.57	0.3368±0.0685
	A4	0.99	0.89	0.93	0.97	0.81	0.97	0.55	0.41	2.0941±0.3358
Airport-3	A1	0.76	0.84	0.80	0.96	0.71	0.88	0.64	0.21	0.3457±0.0636
	A2	0.98	0.47	0.64	0.58	0.37	0.51	0.06	0.01	0.1657±0.0208
	A3	1.00	0.69	0.82	0.95	0.43	0.86	0.30	0.45	0.3336±0.0675
	A4	0.98	0.71	0.82	0.96	0.45	0.89	0.26	0.36	2.4219±0.2964
Airport-4	A1	0.59	0.83	0.69	0.94	0.73	0.86	0.35	0.25	0.3759±0.0717
	A2	0.96	0.44	0.61	0.63	0.25	0.46	0.06	0.00	0.1655±0.0191
	A3	0.99	0.75	0.85	0.94	0.56	0.91	0.31	0.47	0.3715±0.0828
	A4	0.94	0.82	0.88	0.95	0.68	0.97	0.51	0.51	2.1414±0.2992
Mall-1	A1	0.46	0.39	0.43	0.69	0.08	0.41	0.13	-	0.3488±0.0621
	A2	0.81	0.18	0.30	0.34	0.01	0.19	0.02	-	0.1830±0.0168
	A3	0.87	0.33	0.48	0.63	0.03	0.48	0.10	-	0.3812±0.0775
	A4	0.71	0.42	0.53	0.72	0.12	0.62	0.14	-	1.9623±0.3049
Mall-2	A1	0.35	0.36	0.36	0.59	0.13	0.37	0.12	0.06	0.3499±0.0618
	A2	0.92	0.15	0.26	0.30	0.01	0.16	0.01	0.00	0.2113±0.0169
	A3	0.89	0.37	0.52	0.70	0.05	0.54	0.12	0.29	0.4109±0.0970
	A4	0.77	0.45	0.57	0.80	0.12	0.65	0.20	0.22	2.1933±0.2926
Mall-3	A1	0.74	0.60	0.67	0.96	0.25	0.62	0.22	0.05	0.3507±0.0621
	A2	0.91	0.52	0.66	0.83	0.21	0.54	0.07	0.00	0.2292±0.0341
	A3	0.97	0.67	0.79	0.92	0.41	0.81	0.30	0.28	0.3489±0.0718
	A4	0.91	0.76	0.83	0.93	0.58	0.91	0.54	0.23	1.9104±0.2890
Mall-4	A1	0.66	0.43	0.52	0.55	0.30	0.44	0.25	0.08	0.3500±0.0622
	A2	0.95	0.27	0.42	0.38	0.15	0.28	0.07	0.00	0.2354±0.0281
	A3	0.98	0.60	0.74	0.62	0.58	0.66	0.24	0.30	0.3459±0.0690
	A4	0.86	0.68	0.76	0.61	0.75	0.75	0.34	0.36	1.9705±0.3084
Pedestrian-1	A1	0.51	0.61	0.55	0.93	0.27	0.62	0.10	-	0.3639±0.0640
	A2	0.98	0.38	0.55	0.66	0.10	0.39	0.00	-	0.2038±0.0194
	A3	1.00	0.70	0.82	0.88	0.53	0.74	0.32	-	0.3392±0.0709
	A4	0.98	0.74	0.84	0.73	0.75	0.79	0.33	-	1.9328±0.2986
Pedestrian-2	A1	0.42	0.58	0.49	0.84	0.31	0.62	0.09	0.09	0.3584±0.0642
	A2	0.94	0.35	0.51	0.58	0.13	0.38	0.01	0.00	0.2135±0.0177
	A3	0.96	0.55	0.70	0.76	0.34	0.70	0.21	0.16	0.3635±0.0737
	A4	0.86	0.66	0.75	0.77	0.55	0.84	0.28	0.11	2.4119±0.2963
Pedestrian-3	A1	0.55	0.65	0.60	0.83	0.47	0.66	0.32	0.13	0.3518±0.0622
	A2	0.94	0.36	0.52	0.58	0.14	0.37	0.01	0.00	0.2386±0.0158
	A3	1.00	0.88	0.93	0.97	0.78	0.93	0.57	0.62	0.3506±0.0677
	A4	0.99	0.90	0.94	0.95	0.85	0.96	0.53	0.43	2.3447±0.3042
Pedestrian-4	A1	0.56	0.74	0.64	0.95	0.53	0.76	0.49	0.31	0.3464±0.0623
	A2	0.60	0.55	0.57	0.77	0.33	0.58	0.04	0.00	0.3219±0.0184
	A3	0.95	0.64	0.76	0.70	0.59	0.72	0.34	0.32	0.3512±0.0689
	A4	0.86	0.62	0.72	0.58	0.67	0.71	0.26	0.13	2.4137±0.2887
Pedestrian-5	A1	0.58	0.47	0.52	0.82	0.11	0.49	0.33	0.20	0.4089±0.0741
	A2	0.98	0.22	0.36	0.41	0.03	0.24	0.00	0.00	0.2371±0.0231
	A3	1.00	0.67	0.80	0.80	0.54	0.73	0.35	0.42	0.3497±0.0666
	A4	0.99	0.84	0.91	0.93	0.75	0.91	0.43	0.53	1.9676±0.3057
Subway-1	A1	0.66	0.78	0.72	0.95	0.61	0.81	0.74	0.52	0.3444±0.0625
	A2	0.97	0.32	0.48	0.42	0.21	0.36	0.09	0.00	0.1887±0.0144
	A3	0.99	0.70	0.82	0.92	0.52	0.82	0.42	0.49	0.4354±0.1147
	A4	0.85	0.74	0.79	0.92	0.57	0.89	0.35	0.25	1.9687±0.3078
Subway-2	A1	0.63	0.61	0.62	0.88	0.33	0.63	0.33	0.20	0.3437±0.0626
	A2	0.99	0.33	0.50	0.45	0.21	0.35	0.05	0.00	0.2219±0.0112
	A3	1.00	0.58	0.73	0.86	0.32	0.71	0.20	0.43	0.4505±0.1067
	A4	0.96	0.64	0.77	0.88	0.41	0.78	0.21	0.34	2.2229±0.2957
Subway-3	A1	0.50	0.77	0.60	0.90	0.63	0.82	0.62	0.38	0.4373±0.0795
	A2	0.96	0.22	0.36	0.25	0.20	0.24	0.13	0.08	0.1914±0.0176
	A3	0.97	0.61	0.75	0.89	0.40	0.74	0.47	0.65	0.4573±0.1079
	A4	0.97	0.68	0.80	0.90	0.50	0.84	0.49	0.59	2.0628±0.3074
Overall	A1	0.57±0.11	0.65±0.16	0.60±0.11	0.86±0.13	0.43±0.23	0.67±0.17	0.35±0.20	-±-	0.3645±0.0259
	A2	0.92±0.09	0.37±0.13	0.51±0.13	0.54±0.18	0.19±0.12	0.39±0.14	0.04±0.04	-±-	0.2092±0.0387
	A3	0.97±0.04	0.65±0.14	0.77±0.12	0.84±0.12	0.46±0.20	0.76±0.12	0.30±0.12	-±-	0.3725±0.0411
	A4	0.91±0.08	0.71±0.13	0.80±0.11	0.85±0.13	0.58±0.21	0.84±0.11	0.36±0.13	-±-	2.1269±0.1797

Go to Table 1

Table 4: Localization results running algorithms in **System 2** with **GPU**. KEY – Ax: algorithm x; P: precision; R: recall; F: F1-Score.

Video	Alg.	P	R	F	Recall distance		Recall occlusion			Speed [seconds/frame]
					Close	Far	No	Partial	Heavy	
Airport-1	A1	0.56	0.99	0.71	1.00	0.99	1.00	0.80	0.57	0.1668±0.0134
	A2	0.88	0.62	0.72	0.77	0.46	0.62	0.06	0.00	0.0493±0.0025
	A3	1.00	0.80	0.89	0.98	0.62	0.86	0.30	0.75	0.0625±0.0134
	A4	0.98	0.85	0.91	0.97	0.72	0.92	0.28	0.60	0.0817±0.0009
Airport-2	A1	0.63	0.99	0.77	0.99	0.99	1.00	0.94	0.56	0.1669±0.0130
	A2	0.99	0.50	0.67	0.72	0.29	0.51	0.03	0.01	0.0501±0.0048
	A3	1.00	0.82	0.90	0.97	0.66	0.90	0.20	0.64	0.0602±0.0124
	A4	0.99	0.89	0.93	0.97	0.81	0.97	0.55	0.41	0.0817±0.0010
Airport-3	A1	0.81	0.95	0.87	0.99	0.91	0.97	0.93	0.55	0.1668±0.0123
	A2	0.98	0.47	0.64	0.58	0.37	0.51	0.06	0.01	0.0492±0.0034
	A3	0.99	0.71	0.83	0.95	0.48	0.88	0.37	0.48	0.0627±0.0131
	A4	0.98	0.71	0.82	0.96	0.45	0.89	0.26	0.36	0.0816±0.0009
Airport-4	A1	0.63	0.97	0.77	0.98	0.96	0.98	0.91	0.66	0.1667±0.0134
	A2	0.96	0.44	0.61	0.63	0.26	0.46	0.06	0.00	0.0505±0.0057
	A3	0.97	0.77	0.86	0.94	0.61	0.92	0.39	0.54	0.0590±0.0065
	A4	0.94	0.82	0.88	0.95	0.68	0.97	0.51	0.51	0.0822±0.0008
Mall-1	A1	0.23	0.97	0.38	0.99	0.94	0.98	0.85	-	0.1676±0.0142
	A2	0.81	0.18	0.30	0.35	0.01	0.19	0.02	-	0.0601±0.0034
	A3	0.84	0.38	0.52	0.69	0.07	0.54	0.16	-	0.0631±0.0070
	A4	0.71	0.42	0.53	0.72	0.12	0.62	0.14	-	0.0829±0.0008
Mall-2	A1	0.27	0.98	0.43	0.99	0.97	0.99	0.89	0.83	0.1676±0.0159
	A2	0.92	0.15	0.26	0.30	0.01	0.16	0.01	0.00	0.0612±0.0045
	A3	0.86	0.41	0.56	0.75	0.09	0.59	0.18	0.41	0.0654±0.0081
	A4	0.77	0.45	0.57	0.80	0.12	0.65	0.20	0.22	0.0831±0.0009
Mall-3	A1	0.32	0.97	0.49	0.99	0.95	0.98	0.89	0.63	0.1670±0.0130
	A2	0.91	0.52	0.66	0.83	0.21	0.54	0.07	0.00	0.0678±0.0127
	A3	0.90	0.68	0.77	0.92	0.44	0.82	0.34	0.30	0.0584±0.0074
	A4	0.91	0.76	0.83	0.93	0.58	0.91	0.54	0.23	0.0819±0.0009
Mall-4	A1	0.44	0.91	0.59	0.90	0.92	0.92	0.78	0.64	0.1672±0.0124
	A2	0.95	0.27	0.42	0.38	0.16	0.28	0.07	0.00	0.0695±0.0099
	A3	0.93	0.62	0.74	0.63	0.62	0.68	0.28	0.31	0.0591±0.0077
	A4	0.86	0.68	0.76	0.61	0.75	0.75	0.34	0.36	0.0822±0.0008
Pedestrian-1	A1	0.30	0.97	0.46	0.99	0.95	0.98	0.63	-	0.1671±0.0126
	A2	0.97	0.38	0.55	0.66	0.11	0.40	0.00	-	0.0710±0.0043
	A3	0.99	0.75	0.86	0.92	0.59	0.80	0.34	-	0.0574±0.0073
	A4	0.98	0.74	0.84	0.73	0.75	0.79	0.33	-	0.0820±0.0009
Pedestrian-2	A1	0.29	0.94	0.44	0.98	0.91	0.97	0.70	0.39	0.1669±0.0122
	A2	0.93	0.35	0.51	0.58	0.13	0.38	0.01	0.00	0.0774±0.0030
	A3	0.88	0.55	0.68	0.75	0.36	0.70	0.23	0.18	0.0592±0.0061
	A4	0.86	0.66	0.75	0.77	0.55	0.84	0.28	0.11	0.0823±0.0008
Pedestrian-3	A1	0.39	0.95	0.55	0.97	0.94	0.96	0.88	0.45	0.1687±0.0128
	A2	0.93	0.36	0.52	0.58	0.14	0.37	0.01	0.00	0.0741±0.0062
	A3	1.00	0.87	0.93	0.97	0.78	0.92	0.57	0.63	0.0635±0.0132
	A4	0.99	0.90	0.94	0.95	0.85	0.96	0.53	0.43	0.0817±0.0009
Pedestrian-4	A1	0.38	0.94	0.54	0.99	0.90	0.96	0.84	0.45	0.1685±0.0144
	A2	0.60	0.55	0.57	0.77	0.33	0.58	0.04	0.00	0.1035±0.0058
	A3	0.87	0.72	0.79	0.83	0.63	0.81	0.43	0.53	0.0594±0.0071
	A4	0.86	0.62	0.72	0.58	0.67	0.71	0.26	0.13	0.0819±0.0008
Pedestrian-5	A1	0.73	0.92	0.82	0.98	0.87	0.93	0.93	0.73	0.1667±0.0176
	A2	0.98	0.22	0.36	0.42	0.03	0.25	0.00	0.00	0.0891±0.0074
	A3	0.99	0.72	0.84	0.85	0.59	0.78	0.41	0.47	0.0575±0.0067
	A4	0.99	0.84	0.91	0.93	0.75	0.91	0.43	0.53	0.0821±0.0008
Subway-1	A1	0.64	0.95	0.77	0.99	0.91	0.99	0.96	0.66	0.1791±0.0171
	A2	0.97	0.32	0.48	0.42	0.21	0.36	0.09	0.00	0.0619±0.0042
	A3	0.98	0.70	0.82	0.92	0.51	0.82	0.40	0.45	0.0623±0.0084
	A4	0.85	0.74	0.79	0.92	0.57	0.89	0.35	0.25	0.0823±0.0008
Subway-2	A1	0.55	0.96	0.70	0.99	0.94	0.97	0.89	0.65	0.1690±0.0192
	A2	0.99	0.33	0.50	0.45	0.22	0.35	0.05	0.01	0.0645±0.0034
	A3	0.99	0.58	0.73	0.85	0.33	0.70	0.20	0.41	0.0629±0.0059
	A4	0.96	0.64	0.77	0.88	0.41	0.78	0.21	0.34	0.0826±0.0008
Subway-3	A1	0.56	0.94	0.71	0.99	0.90	0.98	0.94	0.65	0.1687±0.0128
	A2	0.95	0.22	0.36	0.25	0.20	0.24	0.13	0.08	0.0644±0.0041
	A3	0.98	0.61	0.75	0.90	0.40	0.74	0.48	0.61	0.0649±0.0083
	A4	0.97	0.68	0.80	0.90	0.50	0.84	0.49	0.59	0.0825±0.0009
Overall	A1	0.48±0.17	0.96±0.02	0.62±0.15	0.98±0.02	0.93±0.03	0.97±0.02	0.86±0.09	-±-	0.1682±0.0029
	A2	0.92±0.10	0.37±0.13	0.51±0.13	0.54±0.18	0.20±0.12	0.39±0.14	0.04±0.04	-±-	0.0665±0.0144
	A3	0.95±0.06	0.67±0.13	0.78±0.11	0.86±0.11	0.49±0.19	0.78±0.11	0.33±0.11	-±-	0.0611±0.0025
	A4	0.91±0.08	0.71±0.13	0.80±0.11	0.85±0.13	0.58±0.21	0.84±0.11	0.36±0.13	-±-	0.0822±0.0004

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Table 5: Localization results running algorithms in **System 2** with **CPU**. KEY – Ax: algorithm x; P: precision; R: recall; F: F1-Score.

Video	Alg.	P	R	F	Recall distance		Recall occlusion			Speed [seconds/frame]
					Close	Far	No	Partial	Heavy	
Airport-1	A1	0.55	0.99	0.71	1.00	0.99	1.00	0.82	0.57	1.9726±0.0401
	A2	0.89	0.61	0.72	0.77	0.45	0.62	0.09	0.00	0.2807±0.0095
	A3	0.97	0.77	0.86	0.95	0.60	0.83	0.22	0.71	0.2718±0.0698
	A4	0.98	0.60	0.74	0.72	0.48	0.65	0.11	0.00	0.7566±0.0415
Airport-2	A1	0.63	0.99	0.77	0.99	0.98	1.00	1.00	0.48	2.0224±0.0386
	A2	1.00	0.50	0.67	0.71	0.29	0.51	0.08	0.00	0.2743±0.0136
	A3	0.98	0.81	0.89	0.96	0.66	0.90	0.19	0.65	0.2685±0.0725
	A4	0.99	0.65	0.78	0.75	0.55	0.72	0.38	0.10	0.7523±0.0433
Airport-3	A1	0.81	0.96	0.88	1.00	0.92	0.97	0.98	0.61	2.0834±0.0465
	A2	0.98	0.47	0.63	0.58	0.36	0.51	0.05	0.00	0.2741±0.0112
	A3	0.94	0.67	0.78	0.90	0.43	0.82	0.35	0.41	0.2747±0.0681
	A4	0.99	0.46	0.63	0.65	0.28	0.59	0.11	0.12	0.7489±0.0486
Airport-4	A1	0.63	0.97	0.76	0.98	0.96	0.98	0.95	0.51	2.0103±0.0341
	A2	0.96	0.44	0.60	0.62	0.25	0.46	0.05	0.00	0.2708±0.0135
	A3	0.94	0.76	0.84	0.89	0.63	0.90	0.41	0.55	0.2976±0.0737
	A4	0.93	0.60	0.73	0.62	0.58	0.70	0.38	0.29	0.7483±0.0406
Mall-1	A1	0.23	0.97	0.37	0.99	0.94	0.98	0.85	-	2.0492±0.0460
	A2	0.81	0.18	0.30	0.34	0.01	0.19	0.03	-	0.2840±0.0119
	A3	0.80	0.39	0.52	0.70	0.08	0.56	0.17	-	0.3257±0.0754
	A4	0.72	0.34	0.46	0.60	0.10	0.52	0.09	-	0.7632±0.0611
Mall-2	A1	0.27	0.98	0.43	0.99	0.97	0.99	0.88	0.83	2.0991±0.0383
	A2	0.92	0.16	0.27	0.30	0.01	0.16	0.02	0.00	0.2864±0.0139
	A3	0.84	0.43	0.57	0.76	0.10	0.60	0.20	0.47	0.3290±0.0865
	A4	0.77	0.37	0.50	0.67	0.08	0.54	0.12	0.09	0.7585±0.0482
Mall-3	A1	0.32	0.97	0.48	1.00	0.95	0.98	0.88	0.53	2.1051±0.0415
	A2	0.91	0.52	0.66	0.83	0.21	0.54	0.04	0.00	0.3041±0.0253
	A3	0.88	0.68	0.77	0.91	0.46	0.82	0.38	0.21	0.2849±0.0714
	A4	0.95	0.61	0.74	0.75	0.47	0.74	0.31	0.00	0.7542±0.0566
Mall-4	A1	0.44	0.91	0.59	0.89	0.92	0.91	0.79	0.65	2.0734±0.0524
	A2	0.94	0.27	0.42	0.38	0.16	0.28	0.08	0.00	0.3043±0.0206
	A3	0.92	0.61	0.74	0.62	0.61	0.67	0.30	0.35	0.2903±0.0690
	A4	0.90	0.53	0.67	0.49	0.58	0.59	0.13	0.29	0.7598±0.0488
Pedestrian-1	A1	0.30	0.97	0.46	0.99	0.95	0.98	0.58	-	2.0761±0.0497
	A2	0.98	0.38	0.55	0.66	0.10	0.39	0.00	-	0.3068±0.0119
	A3	0.99	0.76	0.86	0.92	0.60	0.81	0.33	-	0.2760±0.0689
	A4	1.00	0.65	0.79	0.59	0.72	0.70	0.31	-	0.7497±0.0423
Pedestrian-2	A1	0.29	0.94	0.44	0.98	0.91	0.97	0.70	0.37	2.0263±0.0409
	A2	0.95	0.36	0.52	0.59	0.13	0.39	0.01	0.00	0.3125±0.0112
	A3	0.86	0.56	0.68	0.74	0.38	0.71	0.23	0.08	0.2918±0.0686
	A4	0.88	0.54	0.67	0.61	0.48	0.71	0.17	0.23	0.7516±0.0399
Pedestrian-3	A1	0.39	0.95	0.55	0.97	0.94	0.96	0.97	0.33	2.0515±0.0372
	A2	0.94	0.36	0.52	0.58	0.14	0.37	0.00	0.00	0.3047±0.0161
	A3	0.98	0.87	0.92	0.95	0.79	0.91	0.65	0.50	0.2779±0.0698
	A4	0.99	0.74	0.85	0.78	0.70	0.80	0.23	0.25	0.7573±0.0506
Pedestrian-4	A1	0.38	0.94	0.54	1.00	0.89	0.96	0.85	0.49	2.0454±0.0484
	A2	0.60	0.55	0.57	0.77	0.33	0.58	0.02	0.00	0.3767±0.0185
	A3	0.84	0.73	0.78	0.84	0.64	0.82	0.43	0.55	0.2909±0.0743
	A4	0.85	0.49	0.62	0.42	0.56	0.57	0.14	0.08	0.7528±0.0507
Pedestrian-5	A1	0.74	0.92	0.82	0.97	0.88	0.93	0.92	0.76	1.9857±0.0388
	A2	0.96	0.22	0.36	0.41	0.03	0.24	0.00	0.00	0.3319±0.0187
	A3	0.99	0.74	0.84	0.85	0.61	0.79	0.42	0.39	0.2868±0.0877
	A4	0.99	0.76	0.86	0.83	0.69	0.83	0.36	0.33	0.7582±0.0509
Subway-1	A1	0.64	0.95	0.76	0.99	0.91	0.99	0.97	0.65	2.0417±0.0676
	A2	0.98	0.32	0.48	0.42	0.21	0.36	0.08	0.01	0.2954±0.0126
	A3	0.97	0.70	0.82	0.92	0.52	0.83	0.43	0.46	0.2996±0.0838
	A4	0.85	0.65	0.74	0.84	0.47	0.80	0.25	0.15	0.7517±0.0463
Subway-2	A1	0.55	0.97	0.70	1.00	0.94	0.97	0.95	0.67	2.0307±0.0458
	A2	0.99	0.33	0.50	0.45	0.22	0.35	0.03	0.00	0.2995±0.0121
	A3	0.99	0.58	0.73	0.86	0.33	0.71	0.20	0.45	0.3192±0.0971
	A4	0.97	0.57	0.72	0.81	0.35	0.71	0.13	0.33	0.7510±0.0319
Subway-3	A1	0.57	0.94	0.71	0.99	0.90	0.97	0.98	0.65	2.0106±0.0330
	A2	0.94	0.22	0.36	0.24	0.20	0.24	0.14	0.09	0.3006±0.0114
	A3	0.98	0.62	0.76	0.90	0.41	0.75	0.50	0.64	0.3106±0.0714
	A4	0.97	0.61	0.75	0.83	0.43	0.76	0.41	0.53	0.7586±0.0461
Overall	A1	0.48±0.17	0.96±0.02	0.62±0.15	0.98±0.02	0.93±0.03	0.97±0.02	0.88±0.11	-±-	2.0427±0.0371
	A2	0.92±0.09	0.37±0.13	0.51±0.13	0.54±0.18	0.19±0.12	0.39±0.14	0.04±0.04	-±-	0.3004±0.0252
	A3	0.93±0.06	0.67±0.13	0.77±0.11	0.85±0.10	0.49±0.19	0.78±0.10	0.34±0.13	-±-	0.2935±0.0184
	A4	0.92±0.08	0.57±0.11	0.70±0.11	0.68±0.12	0.47±0.18	0.68±0.09	0.23±0.11	-±-	0.7545±0.0043

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Table 6: Localization results running algorithms in **System 3** with CPU. KEY – Ax: algorithm x; P: precision; R: recall; F: F1-Score.

Video	Alg.	P	R	F	Recall distance		Recall occlusion			Speed [seconds/frame]
					Close	Far	No	Partial	Heavy	
Airport-1	A1	0.50	0.87	0.63	0.99	0.76	0.88	0.64	0.14	3.1211 ± 0.0916
	A2	0.89	0.61	0.72	0.77	0.45	0.62	0.09	0.00	0.6828 ± 0.0444
	A3	0.97	0.77	0.86	0.95	0.59	0.82	0.28	0.71	2.4976 ± 0.2327
	A4	0.98	0.60	0.74	0.72	0.48	0.65	0.11	0.00	10.1951 ± 0.3866
Airport-2	A1	0.67	0.83	0.74	0.99	0.68	0.85	0.38	0.13	2.7811 ± 0.1235
	A2	1.00	0.50	0.67	0.71	0.29	0.51	0.08	0.00	0.6643 ± 0.0762
	A3	0.98	0.80	0.88	0.95	0.64	0.88	0.15	0.61	2.5249 ± 0.2743
	A4	0.99	0.65	0.78	0.75	0.55	0.72	0.38	0.10	9.3575 ± 0.2061
Airport-3	A1	0.76	0.84	0.80	0.97	0.72	0.88	0.66	0.21	3.1335 ± 0.1700
	A2	0.98	0.47	0.63	0.58	0.36	0.51	0.05	0.00	0.6864 ± 0.0883
	A3	0.96	0.66	0.78	0.91	0.40	0.81	0.33	0.42	2.5088 ± 0.2729
	A4	0.99	0.46	0.63	0.65	0.28	0.59	0.11	0.12	9.3513 ± 0.2682
Airport-4	A1	0.59	0.83	0.69	0.93	0.73	0.86	0.29	0.24	3.1468 ± 0.2181
	A2	0.96	0.44	0.60	0.62	0.25	0.46	0.05	0.00	0.6835 ± 0.0719
	A3	0.96	0.73	0.83	0.87	0.59	0.88	0.36	0.38	2.8266 ± 0.3600
	A4	0.93	0.60	0.73	0.62	0.58	0.70	0.38	0.29	10.1273 ± 0.2235
Mall-1	A1	0.45	0.39	0.42	0.68	0.08	0.41	0.12	-	3.1209 ± 0.0989
	A2	0.81	0.18	0.30	0.34	0.01	0.19	0.03	-	0.7677 ± 0.1023
	A3	0.84	0.34	0.48	0.65	0.03	0.50	0.11	-	2.9135 ± 0.2794
	A4	0.72	0.34	0.46	0.60	0.10	0.52	0.09	-	10.1540 ± 0.2828
Mall-2	A1	0.35	0.36	0.36	0.60	0.12	0.37	0.13	0.09	2.7740 ± 0.1025
	A2	0.92	0.16	0.27	0.30	0.01	0.16	0.02	0.00	0.7604 ± 0.0542
	A3	0.86	0.38	0.53	0.72	0.06	0.55	0.14	0.38	3.0588 ± 0.4127
	A4	0.77	0.37	0.50	0.67	0.08	0.54	0.12	0.09	10.1212 ± 0.1426
Mall-3	A1	0.74	0.61	0.67	0.96	0.26	0.62	0.16	0.05	2.7840 ± 0.1521
	A2	0.91	0.52	0.66	0.83	0.21	0.54	0.04	0.00	0.8176 ± 0.1507
	A3	0.97	0.67	0.79	0.90	0.43	0.81	0.31	0.19	2.6653 ± 0.3049
	A4	0.95	0.61	0.74	0.75	0.47	0.74	0.31	0.00	10.1575 ± 0.2829
Mall-4	A1	0.66	0.43	0.52	0.55	0.31	0.44	0.26	0.08	2.7724 ± 0.0874
	A2	0.94	0.27	0.42	0.38	0.16	0.28	0.08	0.00	0.8281 ± 0.1137
	A3	0.97	0.58	0.73	0.59	0.57	0.64	0.22	0.34	2.6152 ± 0.2583
	A4	0.90	0.53	0.67	0.49	0.58	0.59	0.13	0.29	9.6167 ± 0.6254
Pedestrian-1	A1	0.51	0.61	0.55	0.93	0.27	0.62	0.17	-	3.1590 ± 0.2639
	A2	0.98	0.38	0.55	0.66	0.10	0.39	0.00	-	0.8501 ± 0.0585
	A3	0.99	0.72	0.83	0.89	0.55	0.76	0.31	-	2.5926 ± 0.2751
	A4	1.00	0.65	0.79	0.59	0.72	0.70	0.31	-	9.4000 ± 0.2214
Pedestrian-2	A1	0.42	0.57	0.49	0.84	0.30	0.62	0.05	0.10	3.1205 ± 0.0994
	A2	0.95	0.36	0.52	0.59	0.13	0.39	0.01	0.00	0.9135 ± 0.0479
	A3	0.95	0.55	0.70	0.75	0.35	0.71	0.21	0.12	2.7351 ± 0.2915
	A4	0.88	0.54	0.67	0.61	0.48	0.71	0.17	0.23	9.4902 ± 0.2433
Pedestrian-3	A1	0.55	0.64	0.59	0.84	0.45	0.66	0.28	0.07	2.7755 ± 0.0917
	A2	0.94	0.36	0.52	0.58	0.14	0.37	0.00	0.00	0.8593 ± 0.1070
	A3	0.98	0.86	0.92	0.93	0.79	0.91	0.60	0.50	2.5791 ± 0.2412
	A4	0.99	0.74	0.85	0.78	0.70	0.80	0.23	0.25	9.3863 ± 0.2083
Pedestrian-4	A1	0.56	0.75	0.64	0.95	0.54	0.77	0.42	0.30	2.7990 ± 0.2282
	A2	0.60	0.55	0.57	0.77	0.33	0.58	0.02	0.00	1.1712 ± 0.0743
	A3	0.93	0.63	0.75	0.68	0.60	0.72	0.33	0.20	2.6934 ± 0.2544
	A4	0.85	0.49	0.62	0.42	0.56	0.57	0.14	0.08	9.3856 ± 0.2142
Pedestrian-5	A1	0.59	0.48	0.53	0.82	0.12	0.49	0.34	0.22	3.1169 ± 0.0680
	A2	0.96	0.22	0.36	0.41	0.03	0.24	0.00	0.00	1.0555 ± 0.1597
	A3	1.00	0.69	0.81	0.79	0.58	0.74	0.37	0.37	2.6714 ± 0.2789
	A4	0.99	0.76	0.86	0.83	0.69	0.83	0.36	0.33	10.1009 ± 0.2464
Subway-1	A1	0.66	0.79	0.72	0.95	0.62	0.81	0.77	0.53	3.1159 ± 0.0648
	A2	0.98	0.32	0.48	0.42	0.21	0.36	0.08	0.01	0.7848 ± 0.0499
	A3	0.98	0.71	0.82	0.92	0.53	0.83	0.44	0.52	3.1649 ± 0.5909
	A4	0.85	0.65	0.74	0.84	0.47	0.80	0.25	0.15	10.0857 ± 0.1356
Subway-2	A1	0.63	0.60	0.61	0.87	0.33	0.62	0.29	0.22	2.7722 ± 0.0578
	A2	0.99	0.33	0.50	0.45	0.22	0.35	0.03	0.00	0.7965 ± 0.0458
	A3	0.99	0.59	0.74	0.88	0.34	0.72	0.23	0.49	3.3488 ± 0.4837
	A4	0.97	0.57	0.72	0.81	0.35	0.71	0.13	0.33	10.1006 ± 0.2826
Subway-3	A1	0.50	0.77	0.60	0.89	0.64	0.81	0.62	0.38	3.1218 ± 0.0892
	A2	0.94	0.22	0.36	0.24	0.20	0.24	0.14	0.09	0.7953 ± 0.0445
	A3	0.97	0.63	0.76	0.90	0.42	0.75	0.50	0.68	3.3771 ± 0.5461
	A4	0.97	0.61	0.75	0.83	0.43	0.76	0.41	0.53	10.1176 ± 0.2464
Overall	A1	0.57 ± 0.11	0.65 ± 0.17	0.60 ± 0.11	0.86 ± 0.13	0.43 ± 0.23	0.67 ± 0.17	0.35 ± 0.21	-	2.9759 ± 0.1734
	A2	0.92 ± 0.09	0.37 ± 0.13	0.51 ± 0.13	0.54 ± 0.18	0.19 ± 0.12	0.39 ± 0.14	0.04 ± 0.04	-	0.8198 ± 0.1319
	A3	0.96 ± 0.04	0.64 ± 0.13	0.76 ± 0.11	0.83 ± 0.11	0.47 ± 0.19	0.75 ± 0.11	0.30 ± 0.13	-	2.7983 ± 0.2824
	A4	0.92 ± 0.08	0.57 ± 0.11	0.70 ± 0.11	0.68 ± 0.12	0.47 ± 0.18	0.68 ± 0.09	0.23 ± 0.11	-	9.8217 ± 0.3540

Go to Table 1

Table 7: Localization results running algorithms in **System 4** with **GPU**. KEY – Ax: algorithm x; P: precision; R: recall; F: F1-Score.

Video	Alg.	P	R	F	Recall distance		Recall occlusion			Speed [seconds/frame]
					Close	Far	No	Partial	Heavy	
Airport-1	A1	0.53	0.78	0.61	0.53	0.46	0.78	0.01	0.00	3.4423±0.9443
	A2	0.57	0.49	0.51	0.42	0.22	0.50	0.00	0.00	1.2229±0.3766
	A3	0.87	0.72	0.77	0.67	0.39	0.77	0.01	0.01	0.9566±0.3283
	A4	0.75	0.54	0.61	0.49	0.32	0.58	0.01	0.00	2.9253±1.9335
Airport-2	A1	0.55	0.73	0.60	0.51	0.46	0.73	0.01	0.01	3.4354±1.0196
	A2	0.47	0.35	0.38	0.35	0.12	0.35	0.00	0.00	1.2442±0.4019
	A3	0.81	0.73	0.76	0.68	0.42	0.77	0.01	0.01	0.9788±0.3120
	A4	0.78	0.58	0.65	0.53	0.35	0.62	0.03	0.00	2.8992±1.8115
Airport-3	A1	0.75	0.82	0.77	0.55	0.45	0.79	0.07	0.04	3.4276±0.8300
	A2	0.55	0.41	0.45	0.31	0.18	0.43	0.00	0.00	1.2157±0.3349
	A3	0.82	0.67	0.72	0.67	0.27	0.74	0.06	0.03	0.9712±0.2993
	A4	0.70	0.47	0.54	0.48	0.17	0.54	0.02	0.01	2.8869±1.8187
Airport-4	A1	0.66	0.90	0.74	0.64	0.62	0.89	0.04	0.02	3.4382±0.9419
	A2	0.60	0.43	0.48	0.41	0.18	0.44	0.00	0.00	1.2526±0.5385
	A3	0.94	0.78	0.84	0.84	0.63	0.91	0.18	0.02	1.0241±0.4227
	A4	0.91	0.62	0.71	0.58	0.59	0.73	0.16	0.01	2.9123±1.6898
Mall-1	A1	0.24	0.97	0.37	0.94	0.90	0.98	0.18	0.00	3.4630±0.9921
	A2	0.55	0.18	0.26	0.31	0.01	0.19	0.01	0.00	1.3272±0.2915
	A3	0.82	0.39	0.52	0.71	0.08	0.57	0.15	0.00	1.0578±0.3567
	A4	0.72	0.35	0.46	0.60	0.10	0.53	0.07	0.00	2.9760±2.2249
Mall-2	A1	0.28	0.98	0.43	0.95	0.92	0.99	0.17	0.04	3.4954±1.3750
	A2	0.52	0.14	0.21	0.25	0.01	0.15	0.00	0.00	1.3812±0.6119
	A3	0.86	0.43	0.56	0.77	0.10	0.60	0.15	0.03	1.1008±0.4643
	A4	0.79	0.37	0.49	0.68	0.08	0.54	0.10	0.00	2.9914±2.2837
Mall-3	A1	0.32	0.84	0.44	0.54	0.56	0.83	0.02	0.02	3.4587±1.1315
	A2	0.57	0.44	0.48	0.44	0.12	0.44	0.00	0.00	1.4139±0.5515
	A3	0.88	0.71	0.76	0.76	0.36	0.83	0.04	0.01	0.9957±0.3764
	A4	0.89	0.62	0.71	0.60	0.36	0.74	0.04	0.00	2.9337±2.0965
Mall-4	A1	0.43	0.89	0.56	0.74	0.70	0.90	0.06	0.03	3.4572±1.1774
	A2	0.52	0.25	0.32	0.24	0.11	0.26	0.01	0.00	0.8281±0.1137
	A3	0.89	0.60	0.70	0.53	0.58	0.65	0.05	0.02	1.0162±0.3507
	A4	0.88	0.52	0.63	0.43	0.53	0.57	0.02	0.02	2.8868±1.5658
Pedestrian-1	A1	0.29	0.79	0.40	0.60	0.56	0.80	0.02	0.00	3.4504±1.1230
	A2	0.58	0.33	0.40	0.45	0.06	0.33	0.00	0.00	1.4107±0.3994
	A3	0.90	0.73	0.80	0.76	0.50	0.76	0.05	0.00	1.0002±0.2560
	A4	0.93	0.67	0.76	0.46	0.60	0.72	0.04	0.00	2.8819±1.4628
Pedestrian-2	A1	0.28	0.79	0.39	0.65	0.49	0.81	0.09	0.01	3.4347±0.8917
	A2	0.51	0.31	0.37	0.37	0.07	0.33	0.00	0.00	1.4599±0.3652
	A3	0.86	0.60	0.69	0.73	0.32	0.75	0.13	0.00	1.0152±0.2832
	A4	0.87	0.59	0.67	0.62	0.42	0.75	0.11	0.00	2.8786±1.4857
Pedestrian-3	A1	0.36	0.76	0.48	0.48	0.45	0.75	0.03	0.00	3.4541±0.8684
	A2	0.35	0.27	0.30	0.28	0.07	0.28	0.00	0.00	1.4534±0.4563
	A3	0.93	0.85	0.88	0.67	0.48	0.87	0.05	0.01	0.9787±0.3153
	A4	0.84	0.70	0.75	0.52	0.41	0.74	0.01	0.00	2.8852±1.7364
Pedestrian-4	A1	0.39	0.88	0.52	0.69	0.54	0.88	0.04	0.02	3.4375±1.0487
	A2	0.54	0.54	0.51	0.53	0.22	0.56	0.00	0.00	1.1712±0.0743
	A3	0.87	0.76	0.79	0.72	0.58	0.85	0.08	0.03	1.0109±0.3944
	A4	0.83	0.51	0.61	0.37	0.49	0.60	0.03	0.00	2.8920±1.6072
Pedestrian-5	A1	0.62	0.71	0.64	0.59	0.44	0.72	0.13	0.06	3.4851±1.4734
	A2	0.37	0.17	0.22	0.24	0.01	0.18	0.00	0.00	1.0555±0.1597
	A3	0.99	0.76	0.85	0.81	0.44	0.82	0.11	0.03	0.9906±0.5171
	A4	0.97	0.78	0.85	0.80	0.49	0.85	0.11	0.02	2.9470±1.9560
Subway-1	A1	0.62	0.85	0.70	0.69	0.69	0.87	0.11	0.25	3.4661±1.3278
	A2	0.73	0.31	0.41	0.32	0.18	0.34	0.01	0.01	1.3494±0.4645
	A3	0.93	0.71	0.79	0.70	0.51	0.82	0.11	0.17	1.0066±0.4529
	A4	0.81	0.64	0.70	0.63	0.46	0.76	0.06	0.06	2.9775±2.3249
Subway-2	A1	0.59	0.97	0.70	0.81	0.81	0.97	0.16	0.06	3.4841±1.4000
	A2	0.81	0.32	0.44	0.37	0.18	0.34	0.00	0.00	1.4148±0.6504
	A3	0.98	0.60	0.74	0.75	0.33	0.73	0.11	0.04	1.0673±0.5259
	A4	0.96	0.58	0.72	0.69	0.34	0.72	0.06	0.03	3.0648±2.8867
Subway-3	A1	0.57	0.89	0.67	0.80	0.69	0.90	0.11	0.18	3.4864±1.1692
	A2	0.53	0.20	0.28	0.17	0.14	0.21	0.02	0.02	21.9446±506.1390
	A3	0.94	0.63	0.74	0.87	0.38	0.75	0.23	0.17	1.1062±0.3517
	A4	0.93	0.61	0.72	0.80	0.42	0.75	0.19	0.14	2.8948±1.6968
Overall	A1	0.47±0.16	0.85±0.08	0.56±0.13	0.67±0.14	0.67±0.14	0.85±0.08	0.08±0.06	0.05±0.07	3.4573±0.0206
	A2	0.55±0.11	0.32±0.11	0.38±0.10	0.34±0.09	0.34±0.09	0.33±0.12	0.00±0.00	0.00±0.00	2.5716±5.0047
	A3	0.89±0.05	0.67±0.12	0.74±0.09	0.73±0.08	0.73±0.08	0.76±0.09	0.10±0.06	0.04±0.05	1.0173±0.0429
	A4	0.85±0.08	0.57±0.11	0.66±0.10	0.58±0.12	0.58±0.12	0.67±0.10	0.07±0.05	0.02±0.03	2.9271±0.0507

Go to Table 1

Table 8: People counting results running algorithms in **System 1** with **GPU**. KEY – Ax: algorithm x; MOE: mean opportunity error of people with OTS; COE: cumulative opportunity error of people with OTS; MPE: mean opportunity error all people.

Video	Alg.	MOE	COE	MPE	MOE		Speed [seconds/frame]
					Close	Far	
Airport-1	A1	0.55	503.52	0.89	0.19	0.47	0.0414±0.0129
	A2	0.58	310.28	1.37	0.27	0.43	0.0277±0.0030
	A3	0.64	0.79	0.47	0.15	0.56	0.0629±0.0097
	A4	0.72	1.66	0.33	0.36	0.64	0.0798±0.0006
Airport-2	A1	0.92	783.55	0.67	0.15	0.76	0.1728±0.0195
	A2	0.79	248.07	1.63	0.25	0.51	0.0274±0.0049
	A3	0.66	0.34	0.44	0.16	0.52	0.0823±0.0129
	A4	0.74	1.07	0.25	0.50	0.69	0.0806±0.0008
Airport-3	A1	0.71	377.20	0.96	0.20	0.38	0.0408±0.0099
	A2	1.16	194.36	1.57	0.39	0.51	0.0279±0.0037
	A3	0.71	0.36	0.68	0.25	0.81	0.0663±0.0123
	A4	0.70	1.73	0.67	0.48	1.06	0.0795±0.0006
Airport-4	A1	0.85	354.39	2.58	0.23	0.62	0.0416±0.0129
	A2	1.33	145.71	3.84	0.40	0.71	0.0282±0.0057
	A3	1.68	0.66	1.07	0.30	1.08	0.0667±0.0131
	A4	1.96	2.25	0.81	0.61	1.25	0.0803±0.0005
Mall-1	A1	4.19	224.14	10.09	1.35	2.68	0.0413±0.0134
	A2	5.86	92.34	11.84	1.78	2.62	0.0393±0.0036
	A3	2.23	0.62	7.42	1.57	6.18	0.0756±0.0166
	A4	1.98	4.89	5.57	1.40	6.03	0.0810±0.0005
Mall-2	A1	27.25	2278.65	21.71	8.64	21.02	0.1735±0.0235
	A2	7.78	67.48	13.31	2.20	3.18	0.0391±0.0047
	A3	3.09	0.63	7.64	1.46	6.98	0.0938±0.0152
	A4	2.76	3.92	6.02	1.73	7.08	0.0823±0.0008
Mall-3	A1	7.76	3278.23	6.20	2.45	5.58	0.1739±0.0192
	A2	1.15	378.17	2.65	0.24	0.78	0.0446±0.0128
	A3	1.47	2.97	1.26	0.38	1.23	0.0829±0.0127
	A4	1.27	6.00	0.96	0.57	1.30	0.0810±0.0006
Mall-4	A1	8.13	2499.30	7.13	2.37	6.13	0.1728±0.0183
	A2	2.44	190.66	3.43	0.91	1.22	0.0465±0.0101
	A3	1.35	1.72	1.39	0.76	1.01	0.0831±0.0125
	A4	1.46	5.12	1.15	0.80	1.00	0.0812±0.0006
Pedestrian-1	A1	1.19	957.29	2.40	0.46	0.86	0.0419±0.0122
	A2	1.67	474.53	3.06	0.36	0.86	0.0505±0.0047
	A3	1.01	1.12	0.98	0.37	1.06	0.0635±0.0095
	A4	0.84	4.47	1.02	0.60	1.08	0.0797±0.0005
Pedestrian-2	A1	1.56	568.58	3.25	0.66	1.01	0.0421±0.0108
	A2	1.64	255.97	4.28	0.54	0.95	0.0571±0.0032
	A3	1.77	2.10	2.05	0.69	1.55	0.0647±0.0103
	A4	2.00	8.38	1.72	0.72	1.56	0.0801±0.0004
Pedestrian-3	A1	5.60	2791.24	4.57	1.79	3.63	0.1736±0.0187
	A2	0.66	248.40	1.64	0.34	0.61	0.0522±0.0067
	A3	0.92	0.76	0.30	0.18	0.40	0.0844±0.0130
	A4	0.97	2.60	0.21	0.45	0.57	0.0808±0.0007
Pedestrian-4	A1	3.74	2073.16	2.58	0.58	3.82	0.1755±0.0203
	A2	1.14	628.08	2.24	0.62	0.72	0.0837±0.0059
	A3	1.19	2.00	1.08	0.59	0.88	0.0828±0.0123
	A4	1.09	3.84	1.16	0.90	0.85	0.0810±0.0006
Pedestrian-5	A1	1.90	685.45	3.22	0.49	1.26	0.0401±0.0162
	A2	2.09	435.27	3.70	0.75	1.20	0.0699±0.0076
	A3	1.74	2.36	1.32	0.39	1.03	0.0646±0.0101
	A4	1.70	5.00	0.87	0.52	1.05	0.0801±0.0005
Subway-1	A1	1.60	1404.76	2.29	0.47	0.97	0.0414±0.0160
	A2	4.09	496.18	4.90	1.37	1.69	0.0416±0.0045
	A3	1.80	1.53	2.27	0.67	2.06	0.0735±0.0174
	A4	1.23	7.53	1.24	1.01	1.83	0.0804±0.0006
Subway-2	A1	2.56	1738.14	2.11	2.23	3.24	0.1753±0.0278
	A2	6.54	297.75	8.08	1.48	2.06	0.0428±0.0034
	A3	3.15	0.93	4.49	1.21	3.61	0.0920±0.0150
	A4	2.34	3.54	3.55	1.21	3.54	0.0816±0.0007
Subway-3	A1	3.11	1376.45	4.42	0.57	0.99	0.0459±0.0128
	A2	6.07	295.72	7.42	1.32	1.37	0.0435±0.0049
	A3	2.40	3.24	3.62	0.99	2.70	0.0751±0.0170
	A4	1.83	10.69	2.93	0.79	2.56	0.0806±0.0007
Overall	A1	4.48±6.32	1368.38±938.73	4.69±5.02	1.43±2.02	3.34±4.90	0.0996±0.0655
	A2	2.81±2.34	297.44±148.41	4.69±3.54	0.83±0.60	1.21±0.78	0.0451±0.0150
	A3	1.61±0.77	1.38±0.89	2.28±2.27	0.63±0.44	1.98±1.93	0.0759±0.0100
	A4	1.48±0.61	4.54±2.54	1.78±1.75	0.79±0.37	2.01±1.88	0.0806±0.0007

Go to Table 1

Table 9: People counting results running algorithms in **System 1** with **CPU**. KEY – Ax: algorithm x; MOE: mean opportunity error of people with OTS; COE: cumulative opportunity error of people with OTS; MPE: mean opportunity error all people.

Video	Alg.	MOE	COE	MPE	MOE		Speed [seconds/frame]
					Close	Far	
Airport-1	A1	1.17	811.97	0.87	0.74	0.73	0.3925 ± 0.1227
	A2	0.59	306.93	1.38	0.27	0.42	0.1663 ± 0.0160
	A3	0.63	0.62	0.49	0.14	0.56	0.3878 ± 0.0831
	A4	0.72	1.66	0.33	0.36	0.64	1.1629 ± 0.0656
Airport-2	A1	0.72	641.83	0.98	0.16	0.55	0.3637 ± 0.0636
	A2	0.79	246.97	1.64	0.25	0.51	0.1738 ± 0.0218
	A3	0.63	0.31	0.46	0.15	0.53	0.3367 ± 0.0739
	A4	0.74	1.07	0.25	0.50	0.69	1.9775 ± 0.2558
Airport-3	A1	0.78	465.93	0.89	0.25	0.48	0.3457 ± 0.0636
	A2	1.16	194.14	1.57	0.39	0.51	0.1657 ± 0.0208
	A3	0.74	0.14	0.73	0.21	0.82	0.3981 ± 0.0905
	A4	0.70	1.73	0.67	0.48	1.06	1.1860 ± 0.0436
Airport-4	A1	1.42	519.66	1.82	0.41	1.19	0.3759 ± 0.0717
	A2	1.34	145.11	3.84	0.40	0.72	0.1655 ± 0.0191
	A3	1.56	0.52	1.20	0.29	1.19	0.4222 ± 0.1003
	A4	1.96	2.25	0.81	0.61	1.25	1.1253 ± 0.0383
Mall-1	A1	2.72	482.31	6.85	3.80	2.68	0.3488 ± 0.0621
	A2	5.88	91.43	11.85	1.79	2.62	0.1830 ± 0.0168
	A3	2.63	0.52	8.29	1.93	6.33	0.4651 ± 0.1008
	A4	1.98	4.89	5.57	1.40	6.03	1.1585 ± 0.1737
Mall-2	A1	3.54	579.91	5.75	6.02	3.23	0.3499 ± 0.0618
	A2	7.78	67.30	13.32	2.20	3.18	0.2113 ± 0.0169
	A3	3.56	0.30	8.54	1.72	7.08	0.4092 ± 0.0982
	A4	2.76	3.92	6.02	1.73	7.08	2.0015 ± 0.2615
Mall-3	A1	1.50	937.60	1.74	0.64	1.06	0.3507 ± 0.0621
	A2	1.12	386.03	2.62	0.26	0.77	0.2292 ± 0.0341
	A3	1.02	1.93	1.27	0.40	1.37	0.3465 ± 0.0720
	A4	1.27	6.03	0.96	0.57	1.30	1.9413 ± 0.2814
Mall-4	A1	1.44	607.06	1.91	0.75	1.19	0.3500 ± 0.0622
	A2	2.32	217.12	3.31	0.91	1.16	0.2354 ± 0.0281
	A3	1.29	1.14	1.69	0.78	1.08	0.3379 ± 0.0693
	A4	1.46	5.12	1.15	0.80	1.00	1.9979 ± 0.2431
Pedestrian-1	A1	1.72	2220.94	1.71	1.52	1.00	0.3639 ± 0.0640
	A2	1.68	464.18	3.08	0.36	0.86	0.2038 ± 0.0194
	A3	0.96	1.06	1.18	0.44	1.17	0.4010 ± 0.0939
	A4	0.84	4.47	1.02	0.60	1.08	1.1893 ± 0.0464
Pedestrian-2	A1	2.67	1170.47	2.67	1.39	1.69	0.3584 ± 0.0642
	A2	1.65	253.65	4.29	0.54	0.95	0.2135 ± 0.0177
	A3	1.61	1.65	2.35	0.69	1.77	0.4284 ± 0.0980
	A4	2.00	8.38	1.72	0.72	1.56	1.1892 ± 0.0455
Pedestrian-3	A1	2.98	1664.56	2.27	0.60	2.37	0.3518 ± 0.0622
	A2	0.66	247.76	1.64	0.34	0.61	0.2386 ± 0.0158
	A3	0.92	0.72	0.29	0.17	0.39	0.3512 ± 0.0661
	A4	0.97	2.60	0.21	0.45	0.57	1.9764 ± 0.2614
Pedestrian-4	A1	1.73	1214.40	1.73	0.53	1.62	0.3464 ± 0.0623
	A2	1.15	616.84	2.27	0.62	0.72	0.3219 ± 0.0184
	A3	1.05	1.16	1.40	0.74	0.91	0.3526 ± 0.0695
	A4	1.09	3.84	1.16	0.90	0.85	1.9013 ± 0.2761
Pedestrian-5	A1	2.54	1874.91	2.17	1.08	1.70	0.4089 ± 0.0741
	A2	2.10	430.45	3.71	0.75	1.20	0.2371 ± 0.0231
	A3	1.94	1.82	1.59	0.47	1.17	0.3482 ± 0.0709
	A4	1.70	5.00	0.87	0.52	1.05	1.1471 ± 0.0446
Subway-1	A1	1.54	2007.47	1.66	0.92	1.30	0.3444 ± 0.0625
	A2	4.09	495.53	4.90	1.37	1.69	0.1887 ± 0.0144
	A3	1.82	1.71	2.30	0.65	1.99	0.4940 ± 0.1369
	A4	1.23	7.53	1.24	1.01	1.83	1.1886 ± 0.0703
Subway-2	A1	2.83	951.25	4.15	2.13	1.77	0.3437 ± 0.0626
	A2	6.56	294.93	8.10	1.48	2.08	0.2219 ± 0.0112
	A3	3.12	0.75	4.47	1.14	3.62	0.4523 ± 0.1068
	A4	2.34	3.54	3.55	1.21	3.54	1.9831 ± 0.2577
Subway-3	A1	2.07	2110.97	2.84	0.95	1.98	0.4373 ± 0.0795
	A2	6.07	295.45	7.42	1.32	1.37	0.1914 ± 0.0176
	A3	2.41	2.76	3.64	0.97	2.71	0.4892 ± 0.1144
	A4	1.83	10.69	2.93	0.79	2.56	1.1456 ± 0.0356
Overall	A1	1.96 ± 0.80	1141.33 ± 611.72	2.50 ± 1.65	1.37 ± 1.48	1.53 ± 0.74	0.3645 ± 0.0259
	A2	2.81 ± 2.34	297.11 ± 145.21	4.68 ± 3.54	0.83 ± 0.60	1.21 ± 0.78	0.2092 ± 0.0387
	A3	1.62 ± 0.88	1.07 ± 0.71	2.49 ± 2.49	0.68 ± 0.52	2.04 ± 1.94	0.4013 ± 0.0520
	A4	1.48 ± 0.61	4.54 ± 2.54	1.78 ± 1.75	0.79 ± 0.37	2.01 ± 1.88	1.5170 ± 0.3991

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Table 10: People counting results running algorithms in **System 2** with **GPU**. KEY – Ax: algorithm x; MOE: mean opportunity error of people with OTS; COE: cumulative opportunity error of people with OTS; MPE: mean opportunity error all people.

Video	Alg.	MOE	COE	MPE	MOE		Speed [seconds/frame]
					Close	Far	
Airport-1	A1	1.05	794.52	0.73	0.30	0.86	0.1668±0.0134
	A2	0.58	310.28	1.37	0.27	0.43	0.0493±0.0025
	A3	0.64	0.79	0.47	0.15	0.56	0.0625±0.0134
	A4	0.72	1.66	0.33	0.36	0.64	0.0817±0.0009
Airport-2	A1	0.92	783.55	0.67	0.15	0.76	0.1669±0.0130
	A2	0.79	248.07	1.63	0.25	0.51	0.0501±0.0048
	A3	0.66	0.34	0.44	0.16	0.52	0.0602±0.0124
	A4	0.74	1.07	0.25	0.50	0.69	0.0817±0.0010
Airport-3	A1	0.61	479.05	0.72	0.15	0.33	0.1668±0.0123
	A2	1.16	194.36	1.57	0.39	0.51	0.0492±0.0034
	A3	0.71	0.36	0.68	0.25	0.81	0.0627±0.0131
	A4	0.70	1.73	0.67	0.48	1.06	0.0816±0.0009
Airport-4	A1	2.33	730.05	1.23	0.39	2.17	0.1667±0.0134
	A2	1.33	145.71	3.84	0.40	0.71	0.0505±0.0057
	A3	1.68	0.66	1.07	0.30	1.08	0.0590±0.0065
	A4	1.96	2.25	0.81	0.61	1.25	0.0822±0.0008
Mall-1	A1	25.95	2483.86	19.97	7.30	20.26	0.1676±0.0142
	A2	5.86	92.34	11.84	1.78	2.62	0.0601±0.0034
	A3	2.23	0.62	7.42	1.57	6.18	0.0631±0.0070
	A4	1.98	4.89	5.57	1.40	6.03	0.0829±0.0008
Mall-2	A1	27.25	2278.65	21.71	8.64	21.02	0.1676±0.0159
	A2	7.78	67.48	13.31	2.20	3.18	0.0612±0.0045
	A3	3.09	0.63	7.64	1.46	6.98	0.0654±0.0081
	A4	2.76	3.92	6.02	1.73	7.08	0.0831±0.0009
Mall-3	A1	7.76	3278.23	6.20	2.45	5.58	0.1670±0.0130
	A2	1.15	378.17	2.65	0.24	0.78	0.0678±0.0127
	A3	1.47	2.97	1.26	0.38	1.23	0.0584±0.0074
	A4	1.27	6.00	0.96	0.57	1.30	0.0819±0.0009
Mall-4	A1	8.13	2499.30	7.13	2.37	6.13	0.1672±0.0124
	A2	2.44	190.66	3.43	0.91	1.22	0.0695±0.0099
	A3	1.35	1.72	1.39	0.76	1.01	0.0591±0.0077
	A4	1.46	5.12	1.15	0.80	1.00	0.0822±0.0008
Pedestrian-1	A1	8.84	6844.65	7.43	1.11	8.24	0.1671±0.0126
	A2	1.67	474.53	3.06	0.36	0.86	0.0710±0.0043
	A3	1.01	1.12	0.98	0.37	1.06	0.0574±0.0073
	A4	0.84	4.47	1.02	0.60	1.08	0.0820±0.0009
Pedestrian-2	A1	9.97	3511.00	7.34	1.55	8.73	0.1669±0.0122
	A2	1.64	255.97	4.28	0.54	0.95	0.0774±0.0030
	A3	1.77	2.10	2.05	0.69	1.55	0.0592±0.0061
	A4	2.00	8.38	1.72	0.72	1.56	0.0823±0.0008
Pedestrian-3	A1	5.60	2791.24	4.57	1.79	3.63	0.1687±0.0128
	A2	0.66	248.40	1.64	0.34	0.61	0.0741±0.0062
	A3	0.92	0.76	0.30	0.18	0.40	0.0635±0.0132
	A4	0.97	2.60	0.21	0.45	0.57	0.0817±0.0009
Pedestrian-4	A1	3.74	2073.16	2.58	0.58	3.82	0.1685±0.0144
	A2	1.14	628.08	2.24	0.62	0.72	0.1035±0.0058
	A3	1.19	2.00	1.08	0.59	0.88	0.0594±0.0071
	A4	1.09	3.84	1.16	0.90	0.85	0.0819±0.0008
Pedestrian-5	A1	3.83	3198.18	2.44	1.02	3.10	0.1667±0.0176
	A2	2.09	435.27	3.70	0.75	1.20	0.0891±0.0074
	A3	1.74	2.36	1.32	0.39	1.03	0.0575±0.0067
	A4	1.70	5.00	0.87	0.52	1.05	0.0821±0.0008
Subway-1	A1	2.15	2511.53	1.72	0.64	2.36	0.1791±0.0171
	A2	4.09	496.18	4.90	1.37	1.69	0.0619±0.0042
	A3	1.80	1.53	2.27	0.67	2.06	0.0623±0.0084
	A4	1.23	7.53	1.24	1.01	1.83	0.0823±0.0008
Subway-2	A1	2.56	1738.14	2.11	2.23	3.24	0.1690±0.0192
	A2	6.54	297.75	8.08	1.48	2.06	0.0645±0.0034
	A3	3.15	0.93	4.49	1.21	3.61	0.0629±0.0059
	A4	2.34	3.54	3.55	1.21	3.54	0.0826±0.0008
Subway-3	A1	1.88	2647.24	1.96	0.69	3.36	0.1687±0.0128
	A2	6.07	295.72	7.42	1.32	1.37	0.0644±0.0041
	A3	2.40	3.24	3.62	0.99	2.70	0.0649±0.0083
	A4	1.83	10.69	2.93	0.79	2.56	0.0825±0.0009
Overall	PC1	7.04±7.95	2415.15±1476.19	5.53±6.26	1.96±2.40	5.85±6.07	0.1682±0.0029
	PC2	2.81±2.34	297.44±148.41	4.69±3.54	0.83±0.60	1.21±0.78	0.0665±0.0144
	PC3	1.61±0.77	1.38±0.89	2.28±2.27	0.63±0.44	1.98±1.93	0.0611±0.0025
	PC4	1.48±0.61	4.54±2.54	1.78±1.75	0.79±0.37	2.01±1.88	0.0822±0.0004

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Table 11: People counting results running algorithms in **System 2** with **CPU**. KEY – Ax: algorithm x; MOE: mean opportunity error of people with OTS; COE: cumulative opportunity error of people with OTS; MPE: mean opportunity error all people.

Video	Alg.	MOE	COE	MPE	MOE		Speed [seconds/frame]
					Close	Far	
Airport-1	A1	1.08	79.62	0.73	0.32	0.86	1.9726±0.0401
	A2	0.60	29.72	1.37	0.27	0.42	0.2807±0.0095
	A3	0.63	0.03	0.50	0.17	0.54	0.2718±0.0698
	A4	0.68	1.45	0.91	0.53	0.82	0.7566±0.0415
Airport-2	A1	0.93	77.76	0.68	0.16	0.76	2.0224±0.0386
	A2	0.80	23.62	1.65	0.25	0.52	0.2743±0.0136
	A3	0.66	0.10	0.44	0.18	0.52	0.2685±0.0725
	A4	0.67	1.69	0.82	0.51	0.87	0.7523±0.0433
Airport-3	A1	0.58	47.30	0.71	0.15	0.32	2.0834±0.0465
	A2	1.16	18.30	1.57	0.40	0.52	0.2741±0.0112
	A3	0.74	0.09	0.74	0.27	0.80	0.2747±0.0681
	A4	1.01	0.82	1.24	0.54	1.14	0.7489±0.0486
Airport-4	A1	2.39	73.14	1.27	0.39	2.22	2.0103±0.0341
	A2	1.34	13.59	3.83	0.40	0.73	0.2708±0.0135
	A3	1.76	0.36	1.05	0.39	1.02	0.2976±0.0737
	A4	1.32	1.43	1.77	0.89	1.36	0.7483±0.0406
Mall-1	A1	25.96	247.78	19.98	7.27	20.32	2.0492±0.0460
	A2	5.89	8.22	11.86	1.80	2.61	0.2840±0.0119
	A3	2.10	0.59	6.98	1.48	6.12	0.3257±0.0754
	A4	2.24	0.68	7.00	1.45	6.19	0.7632±0.0611
Mall-2	A1	27.15	226.33	21.60	8.52	21.02	2.0991±0.0383
	A2	7.76	5.88	13.32	2.20	3.18	0.2864±0.0139
	A3	2.89	0.50	7.24	1.35	6.86	0.3290±0.0865
	A4	3.29	0.63	7.59	1.52	7.17	0.7585±0.0482
Mall-3	A1	7.79	328.03	6.23	2.45	5.61	2.1051±0.0415
	A2	1.12	37.47	2.64	0.25	0.75	0.3041±0.0253
	A3	1.56	0.07	1.22	0.40	1.20	0.2849±0.0714
	A4	1.06	2.60	1.40	0.68	1.40	0.7542±0.0566
Mall-4	A1	8.13	249.18	7.14	2.40	6.11	2.0734±0.0524
	A2	2.32	20.98	3.31	0.90	1.16	0.3043±0.0206
	A3	1.33	0.10	1.36	0.77	1.00	0.2903±0.0690
	A4	1.45	1.96	1.75	1.03	1.13	0.7598±0.0488
Pedestrian-1	A1	8.83	683.47	7.42	1.11	8.24	2.0761±0.0497
	A2	1.69	44.65	3.09	0.35	0.87	0.3068±0.0119
	A3	1.01	0.18	0.93	0.37	1.02	0.2760±0.0689
	A4	0.88	2.76	1.35	0.68	1.13	0.7497±0.0423
Pedestrian-2	A1	9.96	350.30	7.33	1.54	8.73	2.0263±0.0409
	A2	1.63	24.43	4.30	0.53	0.94	0.3125±0.0112
	A3	1.82	0.17	1.95	0.70	1.50	0.2918±0.0686
	A4	1.77	2.00	2.28	1.02	1.72	0.7516±0.0399
Pedestrian-3	A1	5.54	275.72	4.51	1.81	3.55	2.0515±0.0372
	A2	0.66	24.08	1.64	0.34	0.61	0.3047±0.0161
	A3	0.93	0.12	0.29	0.19	0.37	0.2779±0.0698
	A4	0.95	1.28	0.53	0.52	0.69	0.7573±0.0506
Pedestrian-4	A1	3.70	204.88	2.54	0.57	3.78	2.0454±0.0484
	A2	1.16	59.96	2.29	0.61	0.74	0.3767±0.0185
	A3	1.25	0.20	1.04	0.62	0.89	0.2909±0.0743
	A4	1.08	2.04	1.74	1.14	1.04	0.7528±0.0507
Pedestrian-5	A1	3.78	316.91	2.39	0.97	3.13	1.9857±0.0388
	A2	2.13	43.45	3.69	0.79	1.20	0.3319±0.0187
	A3	1.71	0.09	1.25	0.35	0.96	0.2868±0.0877
	A4	1.70	1.73	1.18	0.63	1.15	0.7582±0.0509
Subway-1	A1	2.20	251.53	1.77	0.63	2.40	2.0417±0.0676
	A2	4.09	48.35	4.90	1.37	1.70	0.2954±0.0126
	A3	1.75	0.06	2.19	0.73	2.02	0.2996±0.0838
	A4	1.34	2.53	1.68	1.05	1.98	0.7517±0.0463
Subway-2	A1	2.61	173.71	2.20	2.28	3.22	2.0307±0.0458
	A2	6.53	28.89	8.07	1.48	2.09	0.2995±0.0121
	A3	2.97	0.39	4.34	1.10	3.57	0.3192±0.0971
	A4	2.85	0.89	4.19	1.25	3.78	0.7510±0.0319
Subway-3	A1	1.85	263.14	1.97	0.69	3.33	2.0106±0.0330
	A2	6.05	28.55	7.41	1.31	1.37	0.3006±0.0114
	A3	2.26	0.10	3.50	0.94	2.66	0.3106±0.0714
	A4	2.18	2.28	3.46	0.92	2.77	0.7586±0.0461
Overall	PC1	7.03±7.93	240.55±147.35	5.53±6.24	1.95±2.38	5.85±6.07	2.0427±0.0371
	PC2	2.81±2.34	28.76±14.40	4.69±3.54	0.83±0.60	1.21±0.78	0.3004±0.0252
	PC3	1.58±0.70	0.20±0.16	2.19±2.14	0.63±0.40	1.94±1.90	0.2935±0.0184
	PC4	1.53±0.74	1.67±0.67	2.43±2.05	0.90±0.32	2.15±1.88	0.7545±0.0043

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Table 12: People counting results running algorithms in **System 3 (CPU)**. KEY – Ax: algorithm x; MOE: mean opportunity error of people with OTS; COE: cumulative opportunity error of people with OTS; MPE: mean opportunity error all people.

Video	Alg.	MOE	COE	MPE	MOE		Speed [seconds/frame]
					Close	Far	
Airport-1	A1	1.18	80.59	0.86	0.73	0.73	3.1211 ± 0.0916
	A2	0.60	29.72	1.37	0.27	0.42	0.6828 ± 0.0444
	A3	0.63	0.17	0.51	0.16	0.54	2.6135 ± 0.2484
	A4	0.68	1.45	0.91	0.53	0.82	9.2307 ± 0.2637
Airport-2	A1	0.72	63.21	0.99	0.16	0.55	2.7811 ± 0.1235
	A2	0.80	23.62	1.65	0.25	0.52	0.6643 ± 0.0762
	A3	0.65	0.17	0.48	0.19	0.53	2.2832 ± 0.3388
	A4	0.67	1.69	0.82	0.51	0.87	9.1608 ± 0.2413
Airport-3	A1	0.77	45.93	0.89	0.24	0.48	3.1335 ± 0.1700
	A2	1.16	18.30	1.57	0.40	0.52	0.6864 ± 0.0883
	A3	0.77	0.20	0.77	0.25	0.80	2.6241 ± 0.2687
	A4	1.01	0.82	1.24	0.54	1.14	9.2028 ± 0.2565
Airport-4	A1	1.44	51.36	1.81	0.41	1.19	3.1468 ± 0.2181
	A2	1.34	13.59	3.83	0.40	0.73	0.6835 ± 0.0719
	A3	1.62	0.34	1.21	0.41	1.12	2.9254 ± 0.3752
	A4	1.32	1.43	1.77	0.89	1.36	9.5805 ± 0.5325
Mall-1	A1	2.72	47.68	6.85	3.85	2.68	3.1209 ± 0.0989
	A2	5.89	8.22	11.86	1.80	2.61	0.7677 ± 0.1023
	A3	2.49	0.61	7.96	1.78	6.32	3.0050 ± 0.2875
	A4	2.24	0.68	7.00	1.45	6.19	9.2565 ± 0.3312
Mall-2	A1	3.50	57.29	5.68	6.03	3.23	2.7740 ± 0.1025
	A2	7.76	5.88	13.32	2.20	3.18	0.7604 ± 0.0542
	A3	3.30	0.61	8.14	1.51	7.02	2.7213 ± 0.3596
	A4	3.29	0.63	7.59	1.52	7.17	9.2638 ± 0.4218
Mall-3	A1	1.51	92.20	1.75	0.63	1.05	2.7840 ± 0.1521
	A2	1.12	37.47	2.64	0.25	0.75	0.8176 ± 0.1507
	A3	1.03	0.23	1.25	0.42	1.33	2.3666 ± 0.2388
	A4	1.06	2.60	1.40	0.68	1.40	9.2656 ± 0.3036
Mall-4	A1	1.44	60.04	1.89	0.76	1.18	2.7724 ± 0.0874
	A2	2.32	20.98	3.31	0.90	1.16	0.8281 ± 0.1137
	A3	1.28	0.30	1.72	0.81	1.05	2.3343 ± 0.2259
	A4	1.45	1.96	1.75	1.03	1.13	9.2329 ± 0.2718
Pedestrian-1	A1	1.74	223.88	1.71	1.54	1.03	3.1590 ± 0.2639
	A2	1.69	44.65	3.09	0.35	0.87	0.8501 ± 0.0585
	A3	0.97	0.18	1.11	0.43	1.11	2.6965 ± 0.2829
	A4	0.88	2.76	1.35	0.68	1.13	9.2648 ± 0.3023
Pedestrian-2	A1	2.66	115.03	2.64	1.40	1.66	3.1205 ± 0.0994
	A2	1.63	24.43	4.30	0.53	0.94	0.9135 ± 0.0479
	A3	1.68	0.20	2.27	0.69	1.72	2.8511 ± 0.3266
	A4	1.77	2.00	2.28	1.02	1.72	9.3215 ± 0.2994
Pedestrian-3	A1	3.01	167.68	2.29	0.59	2.40	2.7755 ± 0.0917
	A2	0.66	24.08	1.64	0.34	0.61	0.8593 ± 0.1070
	A3	0.91	0.04	0.31	0.20	0.37	2.3097 ± 0.2178
	A4	0.95	1.28	0.53	0.52	0.69	9.2629 ± 0.2010
Pedestrian-4	A1	1.75	122.28	1.76	0.53	1.65	2.7990 ± 0.2282
	A2	1.16	59.96	2.29	0.61	0.74	1.1712 ± 0.0743
	A3	1.05	0.20	1.38	0.77	0.90	2.4043 ± 0.2237
	A4	1.08	2.04	1.74	1.14	1.04	9.1818 ± 0.2202
Pedestrian-5	A1	2.56	187.00	2.14	1.07	1.73	3.1169 ± 0.0680
	A2	2.13	43.45	3.69	0.79	1.20	1.0555 ± 0.1597
	A3	1.94	0.27	1.53	0.46	1.11	2.7614 ± 0.2753
	A4	1.70	1.73	1.18	0.63	1.15	10.3829 ± 0.3096
Subway-1	A1	1.54	201.24	1.64	0.94	1.35	3.1159 ± 0.0648
	A2	4.09	48.35	4.90	1.37	1.70	0.7848 ± 0.0499
	A3	1.76	0.00	2.21	0.67	1.97	3.2397 ± 0.5878
	A4	1.34	2.53	1.68	1.05	1.98	9.2658 ± 0.1809
Subway-2	A1	2.82	93.71	4.14	2.10	1.79	2.7722 ± 0.0578
	A2	6.53	28.89	8.07	1.48	2.09	0.7965 ± 0.0458
	A3	2.91	0.46	4.27	1.07	3.58	2.9767 ± 0.4330
	A4	2.85	0.89	4.19	1.25	3.78	9.1634 ± 0.1038
Subway-3	A1	2.01	209.83	2.79	0.96	1.96	3.1218 ± 0.0892
	A2	6.05	28.55	7.41	1.31	1.37	0.7953 ± 0.0445
	A3	2.21	0.03	3.43	0.87	2.67	3.4676 ± 0.5441
	A4	2.18	2.28	3.46	0.92	2.77	11.2567 ± 1.6378
Overall	A1	1.96 ± 0.80	113.68 ± 61.65	2.49 ± 1.64	1.37 ± 1.48	1.54 ± 0.74	2.9759 ± 0.1734
	A2	2.81 ± 2.34	28.76 ± 14.40	4.69 ± 3.54	0.83 ± 0.60	1.21 ± 0.78	0.8198 ± 0.1319
	A3	1.57 ± 0.79	0.25 ± 0.18	2.41 ± 2.36	0.67 ± 0.45	2.01 ± 1.94	2.7238 ± 0.3345
	A4	1.53 ± 0.74	1.67 ± 0.67	2.43 ± 2.05	0.90 ± 0.32	2.15 ± 1.88	9.4558 ± 0.5461

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Table 13: People counting results running algorithms in **System 4 (GPU)**. KEY – Ax: algorithm x; MOE: mean opportunity error of people with OTS; COE: cumulative opportunity error of people with OTS; MPE: mean opportunity error all people.

Video	Alg.	MOE	COE	MPE	MOE		Speed [seconds/frame]
					Close	Far	
Airport-1	A1	1.07	79.07	0.73	0.31	0.86	3.4423±0.9443
	A2	0.60	30.21	1.37	0.27	0.44	1.2229±0.3766
	A3	0.64	0.00	0.50	0.17	0.53	0.9952±0.3738
	A4	0.67	1.48	0.91	0.52	0.82	2.9256±1.7384
Airport-2	A1	0.91	76.93	0.67	0.14	0.75	3.4354±1.0196
	A2	0.81	23.66	1.65	0.25	0.52	1.2442±0.4019
	A3	0.66	0.10	0.45	0.17	0.52	0.9794±0.2883
	A4	0.67	1.76	0.82	0.49	0.88	2.8904±1.4831
Airport-3	A1	0.58	47.07	0.71	0.15	0.32	3.4276±0.8300
	A2	1.16	18.45	1.57	0.40	0.51	1.2157±0.3349
	A3	0.75	0.05	0.74	0.26	0.79	0.9624±0.3050
	A4	1.02	0.86	1.23	0.54	1.15	2.9042±1.5228
Airport-4	A1	2.37	72.98	1.24	0.40	2.20	3.4382±0.9419
	A2	1.34	13.62	3.83	0.40	0.73	1.2526±0.5385
	A3	1.77	0.32	1.04	0.38	1.00	1.0445±0.4132
	A4	1.33	1.38	1.74	0.87	1.34	2.9489±1.9642
Mall-1	A1	25.72	246.01	19.75	7.12	20.23	3.4630±0.9921
	A2	5.87	8.37	11.84	1.78	2.61	1.3272±0.2915
	A3	2.15	0.55	7.05	1.49	6.12	1.1008±0.4174
	A4	2.24	0.69	7.02	1.48	6.20	2.9410±1.7516
Mall-2	A1	26.95	225.06	21.40	8.38	20.95	3.4954±1.3750
	A2	7.76	5.86	13.32	2.21	3.18	1.3812±0.6119
	A3	2.86	0.58	7.24	1.41	6.87	1.1307±0.3119
	A4	3.24	0.62	7.61	1.51	7.17	2.9592±1.8616
Mall-3	A1	8.04	336.27	6.48	2.48	5.83	3.4587±1.1315
	A2	1.14	36.20	2.66	0.23	0.76	1.4139±0.5515
	A3	1.56	0.13	1.25	0.40	1.22	1.0205±0.3668
	A4	1.05	2.50	1.39	0.67	1.38	2.9122±1.2880
Mall-4	A1	8.24	251.66	7.25	2.33	6.29	3.4572±1.1774
	A2	2.32	20.98	3.31	0.90	1.16	0.8281±0.1137
	A3	1.31	0.08	1.38	0.78	1.02	1.0196±0.2916
	A4	1.42	1.84	1.74	1.03	1.13	2.8956±1.5219
Pedestrian-1	A1	8.80	681.59	7.39	1.20	8.11	3.4504±1.1230
	A2	1.67	46.29	3.06	0.36	0.86	1.4107±0.3994
	A3	1.01	0.12	0.94	0.37	1.02	0.9975±0.3210
	A4	0.91	2.76	1.30	0.71	1.14	2.9077±1.5529
Pedestrian-2	A1	9.87	347.65	7.24	1.45	8.73	3.4347±0.8917
	A2	1.63	24.57	4.29	0.54	0.95	1.4599±0.3652
	A3	1.84	0.33	1.91	0.68	1.47	1.0363±0.3373
	A4	1.79	2.10	2.19	1.01	1.67	2.9221±1.6302
Pedestrian-3	A1	5.54	276.00	4.51	1.69	3.67	3.4541±0.8684
	A2	0.66	24.36	1.63	0.32	0.60	1.4534±0.4563
	A3	0.92	0.16	0.29	0.19	0.37	0.9797±0.2537
	A4	0.93	1.32	0.55	0.53	0.70	2.8981±1.6012
Pedestrian-4	A1	3.68	204.32	2.53	0.63	3.71	3.4375±1.0487
	A2	1.16	59.96	2.29	0.61	0.74	1.1712±0.0743
	A3	1.23	0.16	1.05	0.62	0.89	1.0046±0.3547
	A4	1.08	1.96	1.73	1.13	1.04	2.9194±1.6676
Pedestrian-5	A1	3.72	313.45	2.38	1.00	3.07	3.4851±1.4734
	A2	2.13	43.45	3.69	0.79	1.20	1.0555±0.1597
	A3	1.70	0.09	1.27	0.33	0.98	1.0331±0.6007
	A4	1.70	1.36	1.19	0.62	1.15	3.0618±2.9069
Subway-1	A1	2.28	254.76	1.81	0.64	2.47	3.4661±1.3278
	A2	4.11	47.82	4.92	1.39	1.69	1.3494±0.4645
	A3	1.74	0.06	2.18	0.72	2.02	1.0657±0.4566
	A4	1.29	2.53	1.67	1.04	1.95	2.9754±2.0026
Subway-2	A1	2.72	175.57	2.27	2.35	3.23	3.4841±1.4000
	A2	6.49	29.46	8.04	1.49	2.07	1.4148±0.6504
	A3	2.94	0.32	4.31	1.11	3.57	1.1146±0.4399
	A4	2.86	1.00	4.22	1.28	3.77	2.9906±1.9275
Subway-3	A1	1.84	262.93	1.93	0.69	3.32	3.4864±1.1692
	A2	6.06	28.31	7.42	1.31	1.38	1.9446±0.1390
	A3	2.24	0.28	3.49	0.94	2.66	1.1066±0.3553
	A4	2.14	2.21	3.43	0.90	2.73	2.9359±1.5218
Overall	A1	7.02±7.86	240.71±147.21	5.52±6.17	1.94±2.33	5.86±6.05	3.4573±0.0206
	A2	2.81±2.33	28.85±14.40	4.68±3.54	0.83±0.60	1.21±0.78	2.5716±5.0047
	A3	1.58±0.70	0.21±0.17	2.19±2.15	0.63±0.41	1.94±1.91	1.0369±0.0511
	A4	1.52±0.74	1.65±0.65	2.42±2.06	0.90±0.32	2.14±1.88	2.9368±0.0427

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Table 14: Age estimation results running algorithms in **System 1** with **GPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score				Speed [seconds/frame]
		[0,18]	[19,34]	[35,65]	[65+]	
Airport-1	A5	0.11	0.70	0.20	-	0.0077±0.0042
	A6	0.00	0.46	0.33	-	0.0306±0.0272
Airport-2	A5	0.34	0.66	0.32	-	0.0104±0.0086
	A6	0.00	0.32	0.25	0.00	0.0414±0.0402
Airport-3	A5	0.20	0.79	0.15	0.02	0.0076±0.0040
	A6	0.05	0.56	0.30	-	0.0305±0.0263
Airport-4	A5	0.05	0.75	0.31	0.00	0.0096±0.0068
	A6	0.01	0.38	0.43	-	0.0414±0.0331
Mall-1	A5	-	0.39	0.39	0.03	0.0126±0.0099
	A6	-	0.51	0.77	-	0.0531±0.0466
Mall-2	A5	0.03	0.28	0.64	-	0.0309±0.0124
	A6	0.03	0.44	0.70	-	0.3868±0.1909
Mall-3	A5	0.28	0.59	0.31	-	0.0194±0.0121
	A6	0.01	0.40	0.60	0.02	0.1279±0.0642
Mall-4	A5	0.07	0.42	0.28	-	0.0271±0.0116
	A6	-	0.48	0.66	0.02	0.1419±0.0690
Pedestrian-1	A5	0.07	0.74	0.36	0.01	0.0080±0.0056
	A6	0.05	0.32	0.36	-	0.0298±0.0352
Pedestrian-2	A5	0.16	0.55	0.46	0.13	0.0093±0.0070
	A6	-	0.40	0.38	0.00	0.0401±0.0322
Pedestrian-3	A5	0.07	0.66	0.62	0.03	0.0234±0.0125
	A6	-	0.37	0.51	-	0.1008±0.0536
Pedestrian-4	A5	0.18	0.40	0.37	0.02	0.0234±0.0127
	A6	-	0.40	0.58	0.02	0.0987±0.0630
Pedestrian-5	A5	0.05	0.76	0.78	0.01	0.0073±0.0056
	A6	0.02	0.49	0.56	-	0.0287±0.0334
Subway-1	A5	0.01	0.77	0.10	0.03	0.0175±0.0133
	A6	-	0.63	0.18	-	0.0674±0.0522
Subway-2	A5	0.05	0.74	0.38	0.03	0.0271±0.0122
	A6	-	0.64	0.33	-	0.1367±0.0918
Subway-3	A5	0.11	0.53	0.22	0.00	0.0212±0.0150
	A6	0.00	0.64	0.66	-	0.0650±0.0366
Overall	A5	0.12±0.09	0.61±0.16	0.37±0.18	0.03±0.03	0.0164±0.0080
	A6	0.02±0.02	0.47±0.10	0.47±0.17	0.02±0.01	0.0888±0.0861

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Table 15: Age estimation results running algorithms in **System 1** with **CPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score				Speed [seconds/frame]
		[0,18]	[19,34]	[35,65]	[65+]	
Airport-1	A5	0.10	0.70	0.21	-	0.1638±0.0392
	A6	0.00	0.46	0.32	-	1.2388±0.4503
Airport-2	A5	0.20	0.59	0.23	-	0.1363±0.0739
	A6	0.03	0.37	0.23	-	1.0245±0.6295
Airport-3	A5	0.19	0.78	0.16	0.02	0.1410±0.0658
	A6	0.05	0.55	0.31	-	1.1198±0.6068
Airport-4	A5	0.05	0.75	0.34	0.00	0.1719±0.0369
	A6	0.01	0.38	0.44	-	1.3792±0.5134
Mall-1	A5	-	0.37	0.38	0.02	0.1737±0.0174
	A6	-	0.50	0.78	-	2.0464±0.7904
Mall-2	A5	0.01	0.36	0.43	0.01	0.1769±0.0145
	A6	0.06	0.53	0.72	-	2.6070±1.1557
Mall-3	A5	0.12	0.56	0.22	0.00	0.1615±0.0431
	A6	0.02	0.46	0.57	-	1.3027±0.5113
Mall-4	A5	0.02	0.49	0.27	-	0.1600±0.0463
	A6	-	0.51	0.60	-	1.2904±0.5385
Pedestrian-1	A5	0.07	0.72	0.37	0.01	0.1701±0.0255
	A6	0.04	0.34	0.40	-	1.5363±0.5966
Pedestrian-2	A5	0.14	0.55	0.46	0.12	0.1597±0.0487
	A6	-	0.40	0.40	0.00	1.6718±0.7984
Pedestrian-3	A5	0.01	0.71	0.64	0.14	0.1659±0.0368
	A6	-	0.50	0.47	-	1.6515±0.6932
Pedestrian-4	A5	0.07	0.38	0.35	0.05	0.1667±0.0317
	A6	-	0.47	0.58	0.01	1.6602±0.6433
Pedestrian-5	A5	0.04	0.77	0.78	0.01	0.1685±0.0287
	A6	0.01	0.48	0.56	-	1.5458±0.5273
Subway-1	A5	0.01	0.77	0.14	0.03	0.1524±0.0582
	A6	-	0.62	0.18	-	1.8670±1.0221
Subway-2	A5	0.00	0.78	0.06	0.09	0.1695±0.0381
	A6	-	0.68	0.19	-	1.9276±0.7464
Subway-3	A5	0.10	0.53	0.28	0.00	0.1684±0.0359
	A6	0.00	0.64	0.67	-	1.9310±0.7390
Overall	A5	0.08±0.06	0.61±0.15	0.33±0.18	0.04±0.05	0.1629±0.0109
	A6	0.03±0.02	0.49±0.09	0.46±0.18	0.01±0.01	1.6125±0.3907

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Table 16: Age estimation results running algorithms in **System 2** with **GPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score				Speed [seconds/frame]
		[0,18]	[19,34]	[35,65]	[65+]	
Airport-1	A5	0.33	0.70	0.32	-	0.0083±0.0021
	A6	-	0.55	0.33	-	0.0389±0.0246
Airport-2	A5	0.34	0.66	0.32	-	0.0077±0.0027
	A6	0.00	0.32	0.25	0.00	0.0369±0.0301
Airport-3	A5	0.26	0.75	0.19	-	0.0082±0.0022
	A6	0.05	0.54	0.34	0.00	0.0314±0.0196
Airport-4	A5	0.14	0.75	0.44	-	0.0089±0.0016
	A6	0.01	0.35	0.44	-	0.0644±0.0333
Mall-1	A5	-	0.39	0.53	0.00	0.0121±0.0032
	A6	-	0.30	0.78	-	0.3342±0.1210
Mall-2	A5	0.03	0.28	0.64	-	0.0128±0.0042
	A6	0.03	0.44	0.70	-	0.3672±0.1664
Mall-3	A5	0.28	0.59	0.31	-	0.0096±0.0018
	A6	0.01	0.40	0.60	0.02	0.1202±0.0450
Mall-4	A5	0.07	0.42	0.28	-	0.0097±0.0018
	A6	-	0.48	0.66	0.02	0.1325±0.0517
Pedestrian-1	A5	0.11	0.70	0.44	-	0.0098±0.0018
	A6	-	0.38	0.41	-	0.1318±0.0540
Pedestrian-2	A5	0.26	0.50	0.40	0.02	0.0102±0.0020
	A6	-	0.34	0.48	0.13	0.1435±0.0677
Pedestrian-3	A5	0.07	0.66	0.62	0.03	0.0094±0.0015
	A6	-	0.37	0.51	-	0.0910±0.0381
Pedestrian-4	A5	0.18	0.40	0.37	0.02	0.0092±0.0018
	A6	-	0.40	0.58	0.02	0.0875±0.0444
Pedestrian-5	A5	0.02	0.65	0.74	-	0.0092±0.0020
	A6	-	0.44	0.51	-	0.0886±0.0460
Subway-1	A5	0.04	0.76	0.27	0.01	0.0094±0.0020
	A6	-	0.59	0.17	-	0.0928±0.0501
Subway-2	A5	0.05	0.74	0.38	0.03	0.0100±0.0025
	A6	-	0.64	0.33	-	0.1262±0.0623
Subway-3	A5	0.20	0.55	0.11	-	0.0093±0.0020
	A6	-	0.67	0.66	-	0.0953±0.0503
Overall	A5	0.16±0.11	0.59±0.15	0.40±0.16	0.02±0.01	0.0096±0.0013
	A6	0.02±0.02	0.45±0.11	0.48±0.17	0.03±0.05	0.1239±0.0923

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Table 17: Age estimation results running algorithms in **System 2** with **CPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score				Speed [seconds/frame]
		[0,18]	[19,34]	[35,65]	[65+]	
Airport-1	A5	0.33	0.70	0.31	-	0.0149±0.0045
	A6	-	0.56	0.33	-	0.3990±0.2348
Airport-2	A5	0.36	0.66	0.30	-	0.0140±0.0060
	A6	-	0.31	0.24	-	0.3745±0.2805
Airport-3	A5	0.28	0.75	0.19	-	0.0138±0.0045
	A6	0.05	0.54	0.34	0.01	0.3248±0.1970
Airport-4	A5	0.18	0.75	0.42	-	0.0185±0.0038
	A6	0.02	0.35	0.43	-	0.6903±0.3353
Mall-1	A5	-	0.39	0.54	0.00	0.0485±0.0079
	A6	-	0.30	0.78	-	4.5413±0.9187
Mall-2	A5	0.02	0.28	0.63	-	0.0519±0.0092
	A6	0.03	0.45	0.70	-	4.9023±1.1083
Mall-3	A5	0.25	0.58	0.31	-	0.0248±0.0039
	A6	0.01	0.41	0.60	0.02	1.3990±0.4074
Mall-4	A5	0.06	0.42	0.29	-	0.0262±0.0046
	A6	-	0.48	0.66	0.03	1.5869±0.4928
Pedestrian-1	A5	0.11	0.70	0.45	-	0.0262±0.0049
	A6	-	0.36	0.41	-	1.5863±0.5587
Pedestrian-2	A5	0.26	0.50	0.41	0.02	0.0278±0.0059
	A6	-	0.32	0.48	0.13	1.7533±0.6561
Pedestrian-3	A5	0.07	0.66	0.63	0.03	0.0214±0.0036
	A6	-	0.35	0.50	-	0.9879±0.3604
Pedestrian-4	A5	0.16	0.39	0.36	0.01	0.0205±0.0038
	A6	-	0.40	0.58	0.02	0.9375±0.3629
Pedestrian-5	A5	0.03	0.66	0.75	-	0.0209±0.0041
	A6	-	0.45	0.50	-	0.9538±0.3963
Subway-1	A5	0.04	0.76	0.27	0.02	0.0218±0.0052
	A6	-	0.59	0.18	-	1.0687±0.5277
Subway-2	A5	0.05	0.74	0.39	0.02	0.0256±0.0053
	A6	-	0.63	0.33	-	1.5076±0.5511
Subway-3	A5	0.20	0.55	0.10	-	0.0218±0.0055
	A6	-	0.68	0.66	-	1.0611±0.4969
Overall	A5	0.16±0.11	0.59±0.15	0.40±0.17	0.02±0.01	0.0249±0.0105
	A6	0.03±0.02	0.45±0.12	0.48±0.17	0.04±0.05	1.5046±1.2915

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Table 18: Age estimation results running algorithms in **System 3** with GPU. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score				Speed
		[0,18]	[19,34]	[35,65]	[65+]	[seconds/frame]
Airport-1	A5	0.10	0.70	0.20	-	0.3712±0.0888
	A6	0.02	0.47	0.32	-	6.2763±3.0372
Airport-2	A5	0.22	0.59	0.21	-	0.2993±0.1638
	A6	0.02	0.39	0.23	-	4.8429±3.4963
Airport-3	A5	0.24	0.79	0.17	0.01	0.3171±0.1477
	A6	0.04	0.55	0.30	-	4.8207±3.0917
Airport-4	A5	0.03	0.75	0.33	-	0.3824±0.0867
	A6	0.02	0.39	0.43	-	7.4845±3.7042
Mall-1	A5	-	0.37	0.38	0.04	0.4311±0.0587
	A6	-	0.51	0.78	-	13.0439±6.2004
Mall-2	A5	0.01	0.35	0.43	-	0.4638±0.0694
	A6	0.05	0.52	0.72	-	17.5045±9.0727
Mall-3	A5	0.11	0.57	0.24	-	0.3664±0.1072
	A6	0.02	0.45	0.56	-	6.8693±3.5238
Mall-4	A5	0.04	0.48	0.28	-	0.3676±0.1051
	A6	-	0.52	0.60	-	6.8015±3.5475
Pedestrian-1	A5	0.09	0.72	0.40	-	0.3981±0.0635
	A6	0.03	0.37	0.41	-	8.4344±4.5305
Pedestrian-2	A5	0.15	0.54	0.47	0.14	0.3827±0.1205
	A6	-	0.40	0.40	0.01	9.0186±5.3816
Pedestrian-3	A5	0.03	0.70	0.62	0.15	0.3941±0.0871
	A6	-	0.49	0.48	-	9.0293±5.0491
Pedestrian-4	A5	0.04	0.38	0.35	0.05	0.3958±0.0800
	A6	-	0.47	0.58	0.02	8.5377±4.7048
Pedestrian-5	A5	0.05	0.77	0.77	-	0.3970±0.0677
	A6	-	0.46	0.55	-	8.7285±3.7757
Subway-1	A5	-	0.77	0.13	0.03	0.3838±0.1510
	A6	-	0.62	0.17	-	11.8167±7.1642
Subway-2	A5	-	0.78	0.05	0.12	0.4104±0.0993
	A6	-	0.69	0.18	-	11.8930±5.1045
Subway-3	A5	0.09	0.53	0.28	-	0.4132±0.0934
	A6	-	0.64	0.68	-	12.1132±5.1922
Overall	A5	0.09±0.07	0.61±0.15	0.33±0.18	0.08±0.05	0.3859±0.0380
	A6	0.03±0.01	0.50±0.09	0.46±0.18	0.01±0.00	9.2009±3.2449

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Table 19: Age estimation results running algorithms in **System 4** with GPU. KEY – Ax: algorithm x; F: F1-Score. A6 cannot run in System 4 due to lack of memory.

Video	Alg.	F1-Score				Speed
		[0,18]	[19,34]	[35,65]	[65+]	[seconds/frame]
Airport-1	A5	0.31	0.70	0.31	-	0.0722±0.3782
Airport-2	A5	0.35	0.66	0.32	-	0.0675±0.4078
Airport-3	A5	0.29	0.76	0.19	-	0.0695±0.4311
Airport-4	A5	0.18	0.74	0.42	-	0.0809±0.4252
Mall-1	A5	-	0.40	0.54	0.00	0.1772±0.4627
Mall-2	A5	0.02	0.28	0.63	-	0.2085±0.5110
Mall-3	A5	0.26	0.59	0.31	-	0.0958±0.5587
Mall-4	A5	0.06	0.42	0.29	-	0.0915±0.4238
Pedestrian-1	A5	0.11	0.70	0.43	-	0.0907±0.4169
Pedestrian-2	A5	0.24	0.51	0.40	0.02	0.1007±0.4440
Pedestrian-3	A5	0.06	0.66	0.64	0.04	0.0824±0.4130
Pedestrian-4	A5	0.16	0.40	0.35	0.01	0.0874±0.4827
Pedestrian-5	A5	0.02	0.65	0.75	-	0.0977±0.5495
Subway-1	A5	0.03	0.76	0.26	0.02	0.0949±0.4157
Subway-2	A5	0.05	0.74	0.39	0.01	0.1135±0.5004
Subway-3	A5	0.19	0.55	0.11	0.01	0.0850±0.4085
Overall	A5	0.15±0.11	0.59±0.15	0.40±0.16	0.02±0.01	0.1010±0.0370

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Table 20: Gender estimation results running algorithms in **System 1** with **GPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score		Speed [seconds/frame]
		<i>Male</i>	<i>Female</i>	
Airport-1	A5	0.79	0.79	0.0077±0.0042
	A6	0.64	0.68	0.0306±0.0272
Airport-2	A5	0.62	0.75	0.0104±0.0086
	A6	0.48	0.49	0.0414±0.0402
Airport-3	A5	0.72	0.76	0.0076±0.0040
	A6	0.60	0.67	0.0305±0.0263
Airport-4	A5	0.69	0.65	0.0096±0.0068
	A6	0.58	0.63	0.0414±0.0331
Mall-1	A5	0.76	0.71	0.0126±0.0099
	A6	0.63	0.71	0.0531±0.0466
Mall-2	A5	0.78	0.41	0.0309±0.0124
	A6	0.71	0.34	0.3868±0.1909
Mall-3	A5	0.58	0.51	0.0194±0.0121
	A6	0.57	0.43	0.1279±0.0642
Mall-4	A5	0.47	0.32	0.0271±0.0116
	A6	0.45	0.23	0.1419±0.0690
Pedestrian-1	A5	0.59	0.83	0.0080±0.0056
	A6	0.55	0.85	0.0298±0.0352
Pedestrian-2	A5	0.76	0.65	0.0093±0.0070
	A6	0.67	0.60	0.0401±0.0322
Pedestrian-3	A5	0.54	0.48	0.0234±0.0125
	A6	0.49	0.20	0.1008±0.0536
Pedestrian-4	A5	0.76	0.59	0.0234±0.0127
	A6	0.70	0.26	0.0987±0.0630
Pedestrian-5	A5	0.50	0.45	0.0073±0.0056
	A6	0.62	0.74	0.0287±0.0334
Subway-1	A5	0.66	0.62	0.0175±0.0133
	A6	0.62	0.63	0.0674±0.0522
Subway-2	A5	0.51	0.55	0.0271±0.0122
	A6	0.45	0.29	0.1367±0.0918
Subway-3	A5	0.64	0.46	0.0212±0.0150
	A6	0.79	0.53	0.0650±0.0366
Overall	A5	0.65±0.11	0.60±0.14	0.0164±0.0080
	A6	0.60±0.09	0.52±0.20	0.0888±0.0861

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Table 21: Gender estimation results running algorithms in **System 1** with **CPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score		Speed [seconds/frame]
		<i>Male</i>	<i>Female</i>	
Airport-1	A5	0.79	0.77	0.1638±0.0392
	A6	0.63	0.66	1.2388±0.4503
Airport-2	A5	0.75	0.84	0.1363±0.0739
	A6	0.57	0.75	1.0245±0.6295
Airport-3	A5	0.72	0.75	0.1410±0.0658
	A6	0.59	0.66	1.1198±0.6068
Airport-4	A5	0.69	0.63	0.1719±0.0369
	A6	0.58	0.63	1.3792±0.5134
Mall-1	A5	0.72	0.65	0.1737±0.0174
	A6	0.58	0.69	2.0464±0.7904
Mall-2	A5	0.74	0.64	0.1769±0.0145
	A6	0.55	0.63	2.6070±1.1557
Mall-3	A5	0.64	0.77	0.1615±0.0431
	A6	0.51	0.73	1.3027±0.5113
Mall-4	A5	0.59	0.67	0.1600±0.0463
	A6	0.47	0.67	1.2904±0.5385
Pedestrian-1	A5	0.56	0.79	0.1701±0.0255
	A6	0.53	0.83	1.5363±0.5966
Pedestrian-2	A5	0.77	0.63	0.1597±0.0487
	A6	0.65	0.57	1.6718±0.7984
Pedestrian-3	A5	0.58	0.56	0.1659±0.0368
	A6	0.52	0.50	1.6515±0.6932
Pedestrian-4	A5	0.80	0.72	0.1667±0.0317
	A6	0.75	0.60	1.6602±0.6433
Pedestrian-5	A5	0.48	0.40	0.1685±0.0287
	A6	0.60	0.73	1.5458±0.5273
Subway-1	A5	0.63	0.60	0.1524±0.0582
	A6	0.60	0.63	1.8670±1.0221
Subway-2	A5	0.58	0.65	0.1695±0.0381
	A6	0.56	0.67	1.9276±0.7464
Subway-3	A5	0.64	0.46	0.1684±0.0359
	A6	0.77	0.52	1.9310±0.7390
Overall	A5	0.67±0.09	0.66±0.11	0.1629±0.0109
	A6	0.59±0.08	0.65±0.08	1.6125±0.3907

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Table 22: Gender estimation results running algorithms in **System 2** with **GPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score		Speed [seconds/frame]
		<i>Male</i>	<i>Female</i>	
Airport-1	A5	0.81	0.75	0.0083±0.0021
	A6	0.66	0.38	0.0389±0.0246
Airport-2	A5	0.62	0.75	0.0077±0.0027
	A6	0.48	0.49	0.0369±0.0301
Airport-3	A5	0.66	0.67	0.0082±0.0022
	A6	0.61	0.51	0.0314±0.0196
Airport-4	A5	0.71	0.56	0.0089±0.0016
	A6	0.63	0.37	0.0644±0.0333
Mall-1	A5	0.69	0.42	0.0121±0.0032
	A6	0.64	0.37	0.3342±0.1210
Mall-2	A5	0.78	0.41	0.0128±0.0042
	A6	0.71	0.34	0.3672±0.1664
Mall-3	A5	0.58	0.51	0.0096±0.0018
	A6	0.57	0.43	0.1202±0.0450
Mall-4	A5	0.47	0.32	0.0097±0.0018
	A6	0.45	0.23	0.1325±0.0517
Pedestrian-1	A5	0.56	0.66	0.0098±0.0018
	A6	0.59	0.72	0.1318±0.0540
Pedestrian-2	A5	0.77	0.48	0.0102±0.0020
	A6	0.71	0.40	0.1435±0.0677
Pedestrian-3	A5	0.54	0.48	0.0094±0.0015
	A6	0.49	0.20	0.0910±0.0381
Pedestrian-4	A5	0.76	0.59	0.0092±0.0018
	A6	0.70	0.26	0.0875±0.0444
Pedestrian-5	A5	0.39	0.29	0.0092±0.0020
	A6	0.38	0.23	0.0886±0.0460
Subway-1	A5	0.59	0.53	0.0094±0.0020
	A6	0.59	0.42	0.0928±0.0501
Subway-2	A5	0.51	0.55	0.0100±0.0025
	A6	0.45	0.29	0.1262±0.0623
Subway-3	A5	0.65	0.43	0.0093±0.0020
	A6	0.71	0.21	0.0953±0.0503
Overall	A5	0.63±0.12	0.53±0.13	0.0096±0.0013
	A6	0.58±0.10	0.36±0.13	0.1239±0.0923

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Table 23: Gender estimation results running algorithms in **System 2** with **CPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score		Speed [seconds/frame]
		<i>Male</i>	<i>Female</i>	
Airport-1	A5	0.82	0.76	0.0149±0.0045
	A6	0.66	0.38	0.3990±0.2348
Airport-2	A5	0.61	0.75	0.0140±0.0060
	A6	0.46	0.48	0.3745±0.2805
Airport-3	A5	0.66	0.68	0.0138±0.0045
	A6	0.61	0.51	0.3248±0.1970
Airport-4	A5	0.72	0.57	0.0185±0.0038
	A6	0.63	0.38	0.6903±0.3353
Mall-1	A5	0.69	0.42	0.0485±0.0079
	A6	0.64	0.38	4.5413±0.9187
Mall-2	A5	0.79	0.42	0.0519±0.0092
	A6	0.71	0.36	4.9023±1.1083
Mall-3	A5	0.57	0.50	0.0248±0.0039
	A6	0.57	0.44	1.3990±0.4074
Mall-4	A5	0.47	0.32	0.0262±0.0046
	A6	0.45	0.23	1.5869±0.4928
Pedestrian-1	A5	0.56	0.66	0.0262±0.0049
	A6	0.59	0.72	1.5863±0.5587
Pedestrian-2	A5	0.77	0.48	0.0278±0.0059
	A6	0.71	0.38	1.7533±0.6561
Pedestrian-3	A5	0.54	0.48	0.0214±0.0036
	A6	0.49	0.20	0.9879±0.3604
Pedestrian-4	A5	0.75	0.59	0.0205±0.0038
	A6	0.71	0.27	0.9375±0.3629
Pedestrian-5	A5	0.39	0.29	0.0209±0.0041
	A6	0.38	0.22	0.9538±0.3963
Subway-1	A5	0.59	0.52	0.0218±0.0052
	A6	0.59	0.42	1.0687±0.5277
Subway-2	A5	0.51	0.55	0.0256±0.0053
	A6	0.45	0.30	1.5076±0.5511
Subway-3	A5	0.65	0.44	0.0218±0.0055
	A6	0.71	0.20	1.0611±0.4969
Overall	A5	0.63±0.12	0.53±0.13	0.0249±0.0105
	A6	0.58±0.11	0.37±0.13	1.5046±1.2915

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Table 24: Gender estimation results running algorithms in **System 3** with **CPU**. KEY – Ax: algorithm x; F: F1-Score.

Video	Alg.	F1-Score		Speed [seconds/frame]
		Male	Female	
Airport-1	A5	0.78	0.77	0.3712±0.0888
	A6	0.64	0.66	6.2763±3.0372
Airport-2	A5	0.77	0.85	0.2993±0.1638
	A6	0.59	0.76	4.8429±3.4963
Airport-3	A5	0.72	0.75	0.3171±0.1477
	A6	0.59	0.65	4.8207±3.0917
Airport-4	A5	0.72	0.64	0.3824±0.0867
	A6	0.57	0.61	7.4845±3.7042
Mall-1	A5	0.72	0.66	0.4311±0.0587
	A6	0.58	0.70	13.0439±6.2004
Mall-2	A5	0.74	0.64	0.4638±0.0694
	A6	0.53	0.61	17.5045±9.0727
Mall-3	A5	0.64	0.76	0.3664±0.1072
	A6	0.51	0.73	6.8693±3.5238
Mall-4	A5	0.58	0.65	0.3676±0.1051
	A6	0.48	0.67	6.8015±3.5475
Pedestrian-1	A5	0.57	0.78	0.3981±0.0635
	A6	0.52	0.82	8.4344±4.5305
Pedestrian-2	A5	0.76	0.63	0.3827±0.1205
	A6	0.66	0.58	9.0186±5.3816
Pedestrian-3	A5	0.58	0.56	0.3941±0.0871
	A6	0.52	0.50	9.0293±5.0491
Pedestrian-4	A5	0.79	0.71	0.3958±0.0800
	A6	0.75	0.60	8.5377±4.7048
Pedestrian-5	A5	0.49	0.42	0.3970±0.0677
	A6	0.60	0.73	8.7285±3.7757
Subway-1	A5	0.63	0.60	0.3838±0.1510
	A6	0.59	0.62	11.8167±7.1642
Subway-2	A5	0.58	0.65	0.4104±0.0993
	A6	0.57	0.68	11.8930±5.1045
Subway-3	A5	0.64	0.46	0.4132±0.0934
	A6	0.77	0.51	12.1132±5.1922
Overall	A5	0.67±0.09	0.66±0.11	0.3859±0.0380
	A6	0.59±0.08	0.65±0.08	9.2009±3.2449

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Table 25: Gender estimation results running algorithms in **System 4** with **GPU**. KEY – Ax: algorithm x; F: F1-Score. A6 cannot run in System 4 due to lack of memory.

Video	Alg.	F1-Score		Speed [seconds/frame]
		Male	Female	
Airport-1	A5	0.82	0.76	0.0722±0.3782
Airport-2	A5	0.61	0.74	0.0675±0.4078
Airport-3	A5	0.66	0.68	0.0695±0.4311
Airport-4	A5	0.72	0.57	0.0809±0.4252
Mall-1	A5	0.69	0.42	0.1772±0.4627
Mall-2	A5	0.78	0.42	0.2085±0.5110
Mall-3	A5	0.57	0.50	0.0958±0.5587
Mall-4	A5	0.47	0.32	0.0915±0.4238
Pedestrian-1	A5	0.56	0.67	0.0907±0.4169
Pedestrian-2	A5	0.77	0.48	0.1007±0.4440
Pedestrian-3	A5	0.55	0.49	0.0824±0.4130
Pedestrian-4	A5	0.76	0.60	0.0874±0.4827
Pedestrian-5	A5	0.39	0.29	0.0977±0.5495
Subway-1	A5	0.59	0.53	0.0949±0.4157
Subway-2	A5	0.50	0.55	0.1135±0.5004
Subway-3	A5	0.65	0.42	0.0850±0.4085
Overall	A5	0.63±0.12	0.53±0.14	0.1010±0.0370

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Table 26: Localization results running algorithms with **commercial solutions** (C1 and C2). KEY – Ax: algorithm x; P: precision; R: recall; F: F1-Score. A1-4 were run in System 1 with GPU. C1-2 were run in two other systems with Intel i7 CPU.

Video	Alg.	P	R	F	Recall distance		Recall occlusion			Speed [seconds/frame]
					Close	Far	No	Partial	Heavy	
Airport-1	A1	0.61	0.66	0.62	0.53	0.32	0.67	0.01	0.00	0.0414±0.0129
	A2	0.57	0.49	0.51	0.41	0.22	0.50	0.00	0.00	0.0277±0.0030
	A3	0.89	0.75	0.80	0.70	0.40	0.79	0.02	0.00	0.0845±0.0130
	A4	0.89	0.79	0.82	0.69	0.49	0.84	0.02	0.00	0.0800±0.0006
	C1	0.52	0.45	0.47	0.42	0.16	0.45	0.01	0.00	0.0261±0.0358
	A6	0.56	0.49	0.51	0.38	0.25	0.49	0.00	0.00	0.0620±0.0289
Airport-2	A1	0.55	0.73	0.60	0.51	0.46	0.73	0.01	0.01	0.1728±0.0195
	A2	0.47	0.35	0.39	0.36	0.12	0.35	0.00	0.00	0.0274±0.0049
	A3	0.83	0.74	0.77	0.68	0.42	0.77	0.01	0.01	0.0828±0.0128
	A4	0.84	0.78	0.80	0.68	0.49	0.83	0.04	0.01	0.0805±0.0009
	C1	0.44	0.36	0.38	0.38	0.12	0.37	0.00	0.00	0.0303±0.0363
	C2	0.52	0.43	0.46	0.38	0.20	0.43	0.00	0.00	0.0541±0.0319
Mall-3	A1	0.34	0.84	0.46	0.54	0.56	0.82	0.02	0.03	0.1739±0.0192
	A2	0.57	0.43	0.47	0.44	0.11	0.43	0.00	0.00	0.0446±0.0128
	A3	0.90	0.71	0.77	0.77	0.35	0.83	0.04	0.01	0.0822±0.0126
	A4	0.91	0.77	0.81	0.77	0.46	0.90	0.07	0.01	0.0809±0.0009
	C1	0.41	0.32	0.34	0.40	0.00	0.32	0.00	0.00	0.0331±0.0369
	C2	0.46	0.30	0.35	0.30	0.08	0.31	0.00	0.00	0.0703±0.0280
Mall-4	A1	0.45	0.90	0.58	0.74	0.70	0.91	0.06	0.04	0.1728±0.0183
	A2	0.53	0.25	0.32	0.24	0.11	0.26	0.01	0.00	0.0465±0.0101
	A3	0.91	0.61	0.71	0.55	0.58	0.66	0.05	0.02	0.0849±0.0121
	A4	0.86	0.66	0.73	0.53	0.69	0.71	0.06	0.02	0.0805±0.0005
	C1	0.39	0.19	0.25	0.25	0.02	0.20	0.01	0.00	0.0318±0.0351
	C2	0.47	0.21	0.28	0.18	0.14	0.22	0.00	0.00	0.0801±0.0309
Pedestrian-2	A1	0.51	0.44	0.43	0.51	0.11	0.46	0.01	0.00	0.0421±0.0108
	A2	0.51	0.31	0.36	0.37	0.07	0.32	0.00	0.00	0.0571±0.0032
	A3	0.89	0.59	0.69	0.73	0.30	0.73	0.13	0.01	0.0839±0.0124
	A4	0.88	0.69	0.75	0.74	0.48	0.86	0.16	0.00	0.0813±0.0007
	C1	0.47	0.34	0.36	0.46	0.01	0.35	0.01	0.00	0.0435±0.0361
	C2	0.51	0.28	0.34	0.33	0.06	0.31	0.00	0.00	0.0959±0.0274
Pedestrian-3	A1	0.35	0.75	0.47	0.48	0.44	0.74	0.02	0.00	0.1736±0.0187
	A2	0.35	0.27	0.30	0.28	0.07	0.28	0.00	0.00	0.0522±0.0067
	A3	0.94	0.86	0.89	0.70	0.47	0.88	0.05	0.01	0.0835±0.0138
	A4	0.93	0.87	0.90	0.68	0.51	0.90	0.04	0.00	0.0808±0.0010
	C1	0.36	0.28	0.30	0.32	0.04	0.27	0.00	0.00	0.0278±0.0338
	C2	0.36	0.27	0.30	0.24	0.09	0.27	0.00	0.00	0.0548±0.0251
Overall	A1	0.47±0.10	0.72±0.15	0.53±0.07	0.55±0.09	0.55±0.09	0.72±0.14	0.02±0.02	0.01±0.01	0.1294±0.0620
	A2	0.50±0.07	0.35±0.09	0.39±0.08	0.35±0.07	0.35±0.07	0.36±0.08	0.00±0.00	0.00±0.00	0.0426±0.0114
	A3	0.89±0.03	0.71±0.09	0.77±0.06	0.69±0.07	0.69±0.07	0.78±0.07	0.05±0.04	0.01±0.00	0.0836±0.0009
	A4	0.88±0.03	0.76±0.07	0.80±0.05	0.68±0.08	0.68±0.08	0.84±0.06	0.06±0.04	0.01±0.01	0.0807±0.0004
	C1	0.43±0.05	0.32±0.08	0.35±0.07	0.37±0.07	0.37±0.07	0.33±0.08	0.01±0.00	0.00±0.00	0.0321±0.0056
	C2	0.48±0.06	0.33±0.10	0.37±0.08	0.30±0.07	0.30±0.07	0.34±0.09	0.00±0.00	0.00±0.00	0.0695±0.0148

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Table 27: People counting results running algorithms with **commercial solutions** (C1 and C2). KEY – Ax: algorithm x; MOE: mean opportunity error of people with OTS; COE: cumulative opportunity error of people with OTS; MPE: mean opportunity error all people. A1-4 were run in System 1 with GPU. C1-2 were run in two other systems with Intel i7 CPU.

Video	Alg.	MOE	COE	MPE	MOE		Speed [seconds/frame]
					Close	Far	
Airport-1	A1	0.55	503.52	0.89	0.19	0.47	0.0414±0.0129
	A2	0.58	310.28	1.37	0.27	0.43	0.0277±0.0030
	A3	0.64	0.79	0.47	0.15	0.56	0.0845±0.0130
	A4	0.72	1.66	0.33	0.36	0.64	0.0800±0.0006
	C1	0.63	0.24	1.44	0.42	0.57	0.0261±0.0358
	C2	0.58	4.48	1.39	0.26	0.40	0.0620±0.0289
Airport-2	A1	0.92	783.55	0.67	0.15	0.76	0.1728±0.0195
	A2	0.79	248.07	1.63	0.25	0.51	0.0274±0.0049
	A3	0.66	0.34	0.44	0.16	0.52	0.0828±0.0128
	A4	0.74	1.07	0.25	0.50	0.69	0.0805±0.0009
	C1	0.72	0.31	1.48	0.41	0.56	0.0303±0.0363
	C2	0.71	5.52	1.49	0.26	0.46	0.0541±0.0319
Mall-3	A1	7.76	3278.23	6.20	2.45	5.58	0.1739±0.0192
	A2	1.15	378.17	2.65	0.24	0.78	0.0446±0.0128
	A3	1.47	2.97	1.26	0.38	1.23	0.0822±0.0126
	A4	1.27	6.00	0.96	0.57	1.30	0.0809±0.0009
	C1	1.37	0.03	2.82	0.30	0.95	0.0331±0.0369
	C2	1.49	14.97	3.02	0.45	0.88	0.0703±0.0280
Mall-4	A1	8.13	2499.30	7.13	2.37	6.13	0.1728±0.0183
	A2	2.44	190.66	3.43	0.91	1.22	0.0465±0.0101
	A3	1.35	1.72	1.39	0.76	1.01	0.0849±0.0121
	A4	1.46	5.12	1.15	0.80	1.00	0.0805±0.0005
	C1	2.52	0.36	3.51	0.81	1.47	0.0318±0.0351
	C2	2.51	11.66	3.50	0.97	1.28	0.0801±0.0309
Pedestrian-2	A1	1.56	568.58	3.25	0.66	1.01	0.0421±0.0108
	A2	1.64	255.97	4.28	0.54	0.95	0.0571±0.0032
	A3	1.77	2.10	2.05	0.69	1.55	0.0839±0.0124
	A4	2.00	8.38	1.72	0.72	1.56	0.0813±0.0007
	C1	1.58	0.15	4.12	0.39	1.11	0.0435±0.0361
	C2	1.79	14.12	4.46	0.54	1.03	0.0959±0.0274
Pedestrian-3	A1	5.60	2791.24	4.57	1.79	3.63	0.1736±0.0187
	A2	0.66	248.40	1.64	0.34	0.61	0.0522±0.0067
	A3	0.92	0.76	0.30	0.18	0.40	0.0835±0.0138
	A4	0.97	2.60	0.21	0.45	0.57	0.0808±0.0010
	C1	0.65	0.12	1.61	0.37	0.71	0.0278±0.0338
	C2	0.70	10.44	1.69	0.36	0.59	0.0548±0.0251
Overall	A1	4.09±3.19	1737.40±1144.82	3.79±2.45	1.27±0.97	2.93±2.32	0.1294±0.0620
	A2	1.21±0.65	271.92±58.79	2.50±1.07	0.42±0.24	0.75±0.27	0.0426±0.0114
	A3	1.13±0.43	1.45±0.91	0.99±0.63	0.39±0.25	0.88±0.42	0.0836±0.0009
	A4	1.19±0.45	4.14±2.59	0.77±0.56	0.57±0.15	0.96±0.37	0.0807±0.0004
	C1	1.24±0.68	0.20±0.11	2.50±1.06	0.45±0.16	0.90±0.32	0.0321±0.0056
	C2	1.29±0.70	10.20±3.98	2.59±1.15	0.47±0.24	0.77±0.32	0.0695±0.0148

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