SUPPLEMENTARY MATERIAL FOR THE ICIP 2025 PAPER : AN END-TO-END CLASS-AWARE AND ATTENTION-GUIDED MODEL FOR OBJECT STATE CLASSIFICATION

Split id	Train on	osdd	cgqa	mit	vaw
mean	osdd	0.0/0.0	13.7/19.0	20.0/14.1	36.7/38.2
mean	cgqa	19.1/12.1	0.0/0.0	46.4/24.7	18.6/11.9
mean	mit	10.4/4.3	18.0/15.7	0.0/0.0	7.3/4.3
mean	vaw	32.8/30.4	12.4/15.1	14.6/12.1	0.0/0.0
max	osdd	0.0/0.0	17.8/26.6	22.5/17.4	39.4/40.3
max	cgqa	23.0/13.2	0.0/0.0	50.0/26.7	19.9/12.5
max	mit	12.5/5.4	28.1/26.7	0.0/0.0	11.3/13.9
max	vaw	34.4/31.9	14.7/16.2	20.8/17.0	0.0/0.0
max	osdd	0.0/0.0	9.6/14.1	15.0/10.0	33.1/36.2
max	cgqa	15.0/11.5	0.0/0.0	42.9/22.7	16.0/10.7
max	mit	6.9/2.5	13.2/4.9	0.0/0.0	5.3/1.8
max	vaw	31.2/29.3	10.9/13.5	10.4/8.7	0.0/0.0

Table 1. Inter-dataset.Same object

Split id	Train on	osdd	cgqa	mit	vaw
mean	osdd	63.2/61.0	37.2/32.7	29.1/30.5	37.0/34.0
mean	cgqa	32.1/18.4	65.7/40.1	20.9/25.2	48.2/19.4
mean	mit	35.6/20.8	20.0/34.0	81.0/76.4	33.7/22.4
mean	vaw	29.6/29.5	65.6/50.1	40.0/37.0	62.1/50.2

Table 2. Baseline

1. SUPPLEMENTARY

Split id	Train on	osdd	cgqa	mit	vaw
mean	osdd	0.0/0.0	39.9/36.2	46.2/38.4	36.7/38.2
mean	cgqa	37.3/35.9	0.0/0.0	46.4/41.1	49.0/34.9
mean	mit	24.0/39.3	18.0/26.2	0.0/0.0	22.9/49.4
mean	vaw	32.8/30.4	65.3/50.0	45.8/38.0	0.0/0.0
max	osdd	0.0/0.0	48.9/39.9	50.0/41.7	39.4/40.3
max	cgqa	46.2/41.8	0.0/0.0	50.0/44.4	52.7/41.1
max	mit	28.5/40.6	28.1/44.4	0.0/0.0	33.2/62.5
max	vaw	34.4/31.9	67.8/54.5	47.9/41.8	0.0/0.0
max	osdd	0.0/0.0	34.8/29.3	37.5/31.2	33.1/36.2
max	cgqa	27.2/29.9	0.0/0.0	42.9/37.8	45.2/28.5
max	mit	20.3/37.8	13.2/8.2	0.0/0.0	18.6/26.8
max	vaw	31.2/29.3	64.0/46.6	41.7/31.1	0.0/0.0

Table 3. Inter-dataset.Same object

Heads	Train	osdd	cgqa	mit
2	osdd	60.0/58.2	34.9/32.1	44.6/37.5
4	osdd	red60.4/red58.4	34.8/34.3	red46.5/38.6
8	osdd	59.8/57.6	33.0/ 33.4	44.4/36.7
16	osdd	blue60.1/black57.7	32.4/32.5	44.2/36.3
32	osdd	60.0/ 58.4	black30.7/black32.2	44.6/37.1
2	cgqa	41.3/42.8	red66.8/44.4	43.8/39.3
4	cgqa	42.1/ 44.4	66.0/blue45.0	blue44.9/39.8
8	cgqa	40.9/43.0	blue66.6/red45.8	44.0/39.5
16	cgqa	42.2/ 43.8	66.4/44.9	43.5/38.8
32	cgqa	41.4/43.8	65.5/red45.8	red45.1/red40.5
2	mit	30.0/blue43.3	red30.9/36.9	red76.4/red74.2
4	mit	30.0/red43.4	blue30.5/28.0	74.8/72.5
8	mit	30.4/43.2	29.1/30.9	75.7/blue73.7
16	mit	29.5/42.6	28.6/32.1	75.2/73.3
32	mit	29.9/43.1	32.2/red37.0	blue75.9/blue73.
2	vaw	32.8/32.6	red61.9/blue47.5	red38.3/blue35.0
4	vaw	31.2/32.0	blue61.4/red47.9	37.7/33.9
8	vaw	32.8/32.2	59.9/47.3	37.4/33.8
16	vaw	33.1/ 33.1	59.6/47.3	blue38.2/red35.2
32	vaw	32.0/32.7	black61.3/46.3	36.0/33.7

Table 4. Inter-dataset.Same object

ranking	2	4	8	16	32
1	10	7	2	6	6
2	7	11	5	4	7

gamma	Train	osdd	cgqa	mit	vaw
0	osdd	13.3/12.5	12.2/12.4	10.4/9.9	11.4/12.8
0.1	osdd	63.7/60.5	36.4/33.4	49.9/41.5	34.6/35.9
0.2	osdd	62.6/60.2	33.0/35.4	46.5/37.4	32.7/35.3
0.3	osdd	61.2/60.1	35.8/34.2	46.5/37.9	33.6/35.5
0.4	osdd	61.8/59.1	32.7/36.2	45.8/37.6	33.4/35.3
0.5	osdd	60.4/59.1	36.4/34.5	47.5/39.8	34.3/35.8
0.6	osdd	60.3/58.4	34.5/31.7	46.8/38.3	34.3/34.4
0.7	osdd	60.0/58.5	32.4/30.7	43.1/35.4	32.8/33.8
0.8	osdd	58.3/57.2	33.5/32.8	44.4/37.6	33.0/32.8
0.9	osdd	55.7/53.2	32.1/30.7	38.1/31.1	29.8/28.5
1	osdd	56.5/54.4	24.7/29.6	40.2/35.6	26.6/27.7
0	cgqa	19.8/18.9	19.4/18.2	20.5/20.4	18.1/18.5
0.1	cgqa	38.9/40.9	68.1/47.3	43.0/38.5	53.9/42.6
0.2	cgqa	45.5/45.1	67.2/47.9	44.5/39.2	53.6/43.2
0.3	cgqa	44.6/45.6	67.5/48.2	43.9/38.9	54.3/44.5
0.4	cgqa	41.9/43.8	66.9/46.7	43.0/38.8	54.1/45.4
0.5	cgqa	42.5/44.8	66.7/46.4	44.5/40.2	54.0/44.3
0.6	cgqa	40.8/42.8	66.6/45.4	42.9/38.7	53.4/43.5
0.7	cgqa	43.7/45.2	66.2/45.3	46.4/41.3	53.0/43.6
0.8	cgqa	42.5/45.7	65.1/45.6	46.1/41.6	52.5/43.0
0.9	cgqa	42.4/44.5	67.1/43.1	44.3/39.4	50.8/39.4
1	cgqa	33.0/37.1	61.2/36.2	43.9/39.4	46.3/33.1
0	mit	19.8/16.6	21.4/22.7	18.5/18.4	22.0/20.0
0.1	mit	32.7/45.0	36.6/35.5	77.2/76.0	35.0/50.8
0.2	mit	31.7/44.5	32.1/32.9	77.3/76.5	32.8/55.8
0.3	mit	31.7/43.8	32.2/29.8	76.4/74.4	32.5/49.9
0.4	mit	32.0/44.0	30.6/34.5	76.2/74.4	31.7/45.6
0.5	mit	30.1/44.1	31.8/35.3	76.0/75.1	33.0/46.3
0.6	mit	28.3/42.6	29.0/31.8	76.6/75.2	28.5/40.3
0.7	mit	28.5/42.6	28.9/32.1	77.7/75.4	29.4/41.8
0.8	mit	27.4/42.1	24.9/35.5	76.7/73.3	27.4/44.1
0.9	mit	29.4/41.2	27.9/31.3	72.3/69.7	28.8/42.3
1	mit	27.6/41.0	28.6/31.0	69.7/64.9	30.4/46.7
0	vaw	10.4/11.2	12.6/12.5	10.5/10.1	11.1/10.7
0.1	vaw	35.5/33.3	64.5/51.3	44.7/38.5	62.4/54.1
0.2	vaw	35.1/33.7	61.1/50.5	41.8/36.2	60.3/52.7
0.3	vaw	35.0/34.1	62.5/50.8	35.8/32.5	59.8/53.0
0.4	vaw	35.1/34.3	61.9/49.0	41.5/37.4	59.6/52.1
0.5	vaw	33.5/33.1	61.4/49.0	42.0/39.0	58.8/51.1
0.6	vaw	31.8/32.1	61.6/45.0	35.8/33.1	56.7/47.5
0.7	vaw	29.1/31.6	61.1/44.8	34.2/32.5	57.0/48.8
0.8	vaw	30.2/31.5	61.0/44.6	34.6/32.4	57.3/48.4
0.9	vaw	30.0/32.1	59.5/45.7	34.7/32.5	57.3/49.3
1	vaw	28.5/29.0	53.7/41.8	30.2/29.1	49.7/42.2

Table 5. Inter-dataset.Same object

rank	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1	0	19	3	3	3	2	0	2	0	0	0
2	0	4	6	7	3	8	0	1	1	0	0

Metric	[innerleftsep=.25cm,innerrightsep=.25cm]**TrainTest**	**OSDD**	**CGQA**	
2*__OSDD__	WA	red64.4/63.2/blue64.3/43.3	red39.1/blue37.2/16.2/25.9	red50.0/2
	AC	blue60.5/red61.0/57.4/black46.1	red34.8/blue32.7/15.5/black23.1	red42.4/b
2*__CGQA__	WA	red36.2/blue32.1/23.2/black25.7	red69.8/65.7/blue68.7/48.5	red44.6/2
	AC	red39.0/18.4/28.6/blue29.4	blue47.7/40.1/red53.2/34.5	red37.9/25.2
2*__MIT__	WA	35.1/blue35.6/red37.1/25.1	blue35.5/20.0/red53.8/20.7	blue76.8/r
	AC	red46.8/20.8/blue22.3/20.7	red35.6/blue34.0/16.7/21.8	blue75.5/r
2*__VAW__	WA	red35.4/29.6/blue30.9/24.0	red66.5/blue65.6/11.2/51.5	red43.2/bl
	AC	red34.1/29.5/blue30.9/26.2	red52.1/blue50.1/9.8/38.4	red41.1/3

Table 6. Experimental results for our method and the three baseline methods. First/Second/Third/Fourth value in each cell corresponds to the performance of our method/ST-Cl/TS-Cl/P-Cl respectively.

rank 1	6/1/1/0	6/0/2/0	6/2/0/0	5/1/2/0
rank 2	1/2/4/1	2/5/1/0	2/2/2/2	3/3/0/2
total 1	black23	black7	6	0
total 2	black8	red12	7	5
total 1 or 2	black31	black19	13	5

Table 7. Ranking of the 4 evaluated methods.