í	MegaDepth												ScanNe	t								Plan	iar Tai											IM	C PhotoTe	ourism												
Pipeline	Filtered	Precision	Recall	AUC ^F ₆₅	$\mathrm{AUC}^{\mathrm{F}}_{010}$	$\mathrm{AUC}_{0:20}^F$	AUC_{Z}^{F}	AUC_{05}^{E}	AUC_{010}^E	AUC ^E	AUC ^E _∠	Filtere	d Precisio	n Recall	AUC ^F ₀₅	AUC_{02}^F	AUC ₉₂₀	AUC ^F _∠	AUC ₀₅	AUCE 01	0 AUCE	20 AUC	E Filter	red Preci	ision Recs	II AUC	H AUCH	a AUCH	5 AUC ^H	Filtered	d Precisio	m Recall	AUC ^F ₆₅	AUC_{010}^F	$AUC_{0:20}^F$	AUC_{\angle}^F	AUC_{05}^{E}	AUC_{010}^{E}	AUC ^E	0 AUC _∠	AUCF 0(5,	$AUC_{0(10)}^F$	$_{1)}AUC_{6(20)}^{F}$	AUC^F_□	$AUC_{6(5,\frac{1}{2})}^{E}$	$AUC_{0(19,1)}^{E}$	$_{1)}$ AUC $_{0(20,2)}^{E}$.) AUC ^E
$\begin{array}{c} {\rm SIFT+NNR} \\ {\rm +MAGSAC_{\uparrow}} \\ {\rm +MAGSAC_{\downarrow}} \end{array}$	51.10 54.52	53.52 93.20 93.83				0.73 56.67 59.15	0.30 44.29 46.86	45.63 45.04 45.53	62.56 63.53 63.70	76.23 77.20 77.37	61.47 61.92 62.20	78.15 80.84	25.21 55.30 55.24	99.12 46.62 40.60	0.00 5.69 6.11	0.05 13.72 13.92	0.39 23.87 24.21	0.15 14.43 14.74	9.10 10.63 10.53	19.78 22.12 22.00	32.39 34.86 34.55	20.42 22.54 22.36	0.00 69.07 75.34		\$ 90.42 5 50.04 3 39.88		0.41 50.11 49.49	0.70 55.76 54.66	22.88 48.13 45.12	0.00 63.48 66.19	39.31 83.04 83.60	76.37 70.76	0.01 22.52 24.15	0.08 32.90 34.46	0.56 44.20 45.43	0.21 33.21 34.68	42.70 43.51 43.07	57.56 59.08 58.32	69.45 71.32 70.60	56.57 57.97 57.33	0.03 9.66 10.78	0.12 16.49 17.81	0.63 25.08 26.70	0.26 17.07 18.43	18.63 18.50 18.23	30.67 30.62 30.17		31.24 31.28 30.84
$+MAGSAC_{\uparrow}$ $+MAGSAC_{\downarrow}$	47.98 53.64 56.55	92.51 96.39 96.80	90.88 83.39 78.35		27.58 54.83 55.13	47.58 69.60 69.94	29.25 54.34 54.70	45.29 45.82 44.78	64.23 63.57	78.30 78.43 77.79	62.56 62.83 62.05	67.72 79.85 82.11				10.55 18.27 18.60	24.44 81.87 81.94	12.71 19.31 19.48	11.97 11.97 11.58	25.37 24.97 24.70	39.84 39.84 39.49	25.73 25.59 25.26	54.05 72.80 77.78		2 70.87 5 44.48 7 35.81			27.72 53.98 52.56	35.07 44.42 41.45	61.26 66.56 68.51	84.45 89.79 90.12	84.77 75.67 71.18	8.15 31.20 82.16	20.41 45.12 48.05	39.57 59.20 60.01	22.71 45.17 46.08	46.23 46.05 45.74		74.81 74.27 74.16	61.01 60.79 60.62	2.96 13.16 13.59	7.31 22.43 23.05	15.26 33.65 34.51	8.51 23.08 23.72	18.48 18.41 18.24	31.50 31.31 31.25	46.82 46.57 46.43	32.27 32.10 31.97
+MAGSAC _↓	84.25	93.53 92.40 92.64	27.39 26.08 25.22		14.92 47.11 47.41	27.14 60.09 60.65	16.72 47.13 47.45	36.98 35.37 34.12	53.54 51.91 51.04	67.84 66.19 65.97	52.79 51.16 50.38	92.38 93.93 94.38	53.61 46.42 46.41	15.17 12.23 11.32	1.08 4.41 4.76	3.04 9.88 10.47	6.71 17.38 18.14	3.61 10.56 11.12	6.34 5.90 6.46	13.92 13.13 13.86	23.05 22.04 22.75	14.44 13.69 14.36	80.67 84.95 87.28	60.73	20.41			35.36 45.23 44.98	28.29 33.11 32.26	91.03 91.52 91.76	83.75 73.33 73.42	16.71 15.77 15.36	8.06 21.53 21.66	13.27 30.17 30.38	20.88 39.48 39.73	30.39			51.30 50.47 50.45	39.98 39.30 39.34	3.49 10.72 10.97	6.45 17.34 17.46	10.84 24.91 25.08	6.93 17.66 17.84	12.10 11.90 11.89	20.71 20.17 20.21	31.19 30.35 30.41	21.33 20.81 20.84
+CC +MAGSAC† +MAGSAC↓	46.83 54.12 57.00	92.78 96.28 96.69	89.32 80.70 75.85	15.38 38.08 38.90	25.86 52.51 53.23	39.48 66.09 66.67	26.91 52.23 52.94	43.41 42.51 43.38	61.04 60.61 61.45	75.03 74.97 75.54	59.83 59.36 60.12	40.87 81.21 83.30	52.01 59.26 59.14	81.13 41.56 36.73	5.19 5.17	4.21 11.94 11.85	9.53 20.91 21.00	5.08 12.68 12.67	7.83 7.90 7.63	17.31 17.81 17.41	29.22 30.04 29.57	18.12 18.59 18.20	27.33 69.29 75.61	73.36 73.44	7 89.82 6 49.55 4 39.61	34.37 36.27 36.36	46.11 49.40 48.93	50.96 54.71 54.18	47.48 44.77	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a	n/a n/a n/a
+CLNet $+MAGSAC_{\uparrow}$ $+MAGSAC_{\downarrow}$	48.86 55.64 58.52	91.30 96.13 96.59	87.88 79.14 74.21	3.26 28.81 29.34	7.06 42.79 43.59	16.61 58.08 58.76	8.97 43.23 43.90	40.37 38.44 39.67	59.60 57.90 59.05	74.60 73.89 74.44	58.19 56.75 57.72	77.09 83.33 85.15	58.23 61.54 61.33	52.82 39.84 35.34	0.56 3.90 4.05	2.18 9.71 9.76	6.54 19.37 19.07	3.10 10.99 10.96	8.56 8.07 7.94	19.40 18.68 18.47	31.99 31.37 30.64	19.98 19.37 19.02	50.71 69.31 75.56	74.15 74.24	76.41 49.16 4 39.01	20.40 36.14 35.87	28.16 49.35 48.53	33.69 55.05 54.17	39.66 47.42 44.39	62.34 67.41 69.38	85.58 90.32 90.66	83.07 73.95 69.44	7.94 26.78 27.86	14.92 39.41 40.54	26.26 53.47 54.52	16.37 39.88 40.97	43.96 43.51 43.39	60.43 60.08 59.83	73.13 72.83 72.75	59.17 58.80 58.65	1.71 11.57 12.06	4.18 19.50 20.18	9.26 29.46 30.38	5.05 20.18 20.87	17.32 16.94 16.79	29.74 29.35 29.07	44.76 44.42 44.08	30.61 30.24 29.98
+ConvMatch +MAGSAC† +MAGSAC _↓	65.25	88.99 92.85 93.24	79.39 71.39 67.01	15.93 32.47 33.63	27.69 46.75 47.53	42.12 60.19 60.74	28.58 46.47 47.30	39.88 40.80 40.98	57.97 58.21 58.70	72.15 72.15 72.60	56.66 57.05 57.43	69.50 80.86 83.00	56.86 61.77 61.77	70.05 46.67 41.37	7.21 7.35	7.00 16.48 16.79	16.99 28.04 28.37	8.74 17.24 17.50	11.20 10.95 10.32	23.55 23.40 22.55	37.11 37.18 36.37	23.95 23.85 23.08	71.07 84.62 87.40	70.11 70.32	50.96 1 30.68 2 25.19	17.74 22.79 23.35	29.15 37.13 37.38	35.42 44.28 44.67	33.32 33.72 32.65	63.69 69.50 71.33	84.05 90.27 90.62	83.00 72.00 67.59	13.81 29.94 30.85	24.76 43.15 44.08	39.39 56.99 57.74	25.90 43.36 44.22	45.30 44.72 44.86	61.77 61.17 61.20	74.28 73.96 73.85	60.45 59.95 59.97	4.90 12.85 13.55	9.98 21.73 22.41	17.90 32.63 33.28	10.92 22.40 23.08	17.46 17.42 17.47	30.37 30.11 30.13	45.94 45.41 45.53	31.26 30.98 31.04
+DeMatch +MAGSAC† +MAGSAC _↓	58.86 61.43	91.38 95.94 96.37	70.74	31.48	24.92 44.49 45.64	39.03 59.69 60.78	26.05 44.95 45.97	39.51 40.37 40.06	59.03 59.25 59.22	74.52 74.41 74.82	57.69 58.01 58.03	70.09 81.27 83.38	60.81	39.80	1.69 5.55 5.65	5.29 14.06 14.27	13.47 24.86 25.21	6.82 14.82 15.04	9.59 10.55 9.77	21.57 22.54 21.61	35.51 35.68 35.36			72.74 73.00	57.55 4 36.09 5 30.00		34.93 43.92 44.07	40.08 50.93 50.99	39.07 40.02 38.64	63.59 69.61 71.45		81.96 70.95 66.56	12.37 28.37 29.43	10100	37.23 54.90 55.95	41.51 42.58	43.75		73.47 72.94 72.91	59.60 58.94 58.85	4.07 12.07 12.60	8.84 20.49 21.27	16.55 31.02 31.94		16.93 16.99 16.83	29.91 29.34 29.32	44.35	30.69 30.26 30.16
+MAGSAC _↓	52.91	95.34 97.19 97.81	82.60	46.44 46.51	60.91	78.29	26.50 50.91 60.24	47.45 46.71 47.56	64.73 64.90 65.14	77.93 78.41 78.39	63.37 63.34 63.69	79.49 81.29 82.11	66.12 66.19	48.23 44.57 42.62	4.19 8.96 9.11	10.14 19.20 19.35	31.00	11.05 19.75 19.83	11.47	24.19	38.01 37.63 37.98	24.55	54.32 63.57 68.94		71.04 57.22 48.61		46.21	45.80 52.59 52.01	46.44 47.40 45.04	65.09 66.60 67.16	89.13 91.39 91.83	74.92 73.07 71.84	10.61 34.97 35.51	47.20	58.02 58.55	17.95 46.87 47.13	45.13	60.21	72.78 72.09 71.94	59.17 59.09	17.84 17.86	8.27 26.81 27.20	87.87	8.84 27.16 27.88	19.40 19.02	31.83 31.59	47.18 46.36 46.15	32.53 32.26
+GMS +MAGSAC† +MAGSAC↓	63.16 65.38	87.80 89.73 90.04	64.67 59.01 55.65			22.96 59.32 59.32	13.59 47.74 48.13	35.97 35.01 35.93	52.08 51.13 51.57	65.30 64.51 64.77	51.11 50.22 50.76	86.83 89.63 90.60	51.91 47.75 47.80	25.92 20.92 19.03	0.98 3.13 3.28	3.34 7.69 7.91	7.63 13.95 14.36	3.98 8.26 8.52	4.58 4.93 4.58	11.32 11.51 11.06	19.56 19.67 19.81	11.82 12.04 11.82	65.03 76.34 80.57		46.28 6 32.64 26.75	26.43 29.91 29.03	36.94 41.18 40.25	41.58 46.04 45.11	37.81 37.44 35.28	74.34 76.94 78.14	78.84 78.35 78.56	48.20 44.54 42.36	3.75 21.17 21.76	7.78 30.09 30.74	14.88 39.63 40.22				53.30 53.15 53.21	41.78 41.40 41.67	1.56 10.06 10.34	3.47 16.41 16.79	6.88 24.21 24.68	3.97 16.89 17.27	12.50 12.52 12.39	21.61 21.31 21.42	32.73 32.39 32.64	22.28 22.07 22.15
+MS ² DG-Net +MAGSAC _† +MAGSAC _↓	74.47	81.23 91.21 91.62		0.08 28.43 29.41	0.44 41.89 42.57	2.18 55.65 56.40	0.90 41.99 42.79	35.95 34.92 34.04	52.98 52.09 51.49	67.55 66.50 66.53	52.16 51.17 50.69	68.15 85.11 86.68	43.36 56.79 56.73	57.34 35.62 31.66	0.00 4.84 4.89	0.08 11.05 10.93	0.51 19.72 19.15	0.20 11.87 11.66	8.28 8.47 7.98	18.11 18.32 17.63	29.71 30.05 28.94	18.70 18.94 18.18	70.84 85.42 87.76			0.00 25.75 26.05		0.00 47.79 47.82	11.17 35.57 34.49	68.76 77.23 78.55	68.35 80.26 80.58	59.78 51.84 48.82	0.02 21.17 22.32	0.16 30.66 31.99	1.37 41.35 42.75	0.52 31.06 32.36	34.95 34.04 33.48	49.48 48.58 48.20	61.63 60.93 60.70	48.69 47.85 47.46	9.04 9.50	0.11 15.43 16.16	0.75 23.54 24.68	0.29 16.00 16.78	13.58 13.30 13.05	23.95 23.55 23.19	36.97 36.25 35.86	24.83 24.37 24.04
$+MAGSAC_{\uparrow}$ $+MAGSAC_{\downarrow}$	55.23 58.12	91.24 96.03 96.44	79.74	3.82 30.40 31.28	8.66 44.46 45.29	19.14 58.53 59.33	10.54 44.46 45.30	40.59 40.44 40.53	60.28 59.76 59.69	75.83 75.27 75.23	58.49 58.48	76.16 82.52 84.40	58.45 61.43 61.38	54.53 41.22 36.74	1.23 4.09 4.63	3.92 11.43 11.27	10.32 21.51 21.37	5.16 12.34 12.42	9.29 9.01 8.41	20.31 20.26 19.17	32.97 33.34 32.13	20.86 20.87 19.90	50.91 69.57 75.66	76.96	76.14 49.00 39.33	19.32 35.76 36.44	49.62	35.00 88.30 55.03	39.95 47.42 45.10	62.07 67.16 69.16	86.37 90.86 91.20	84.67 75.22 70.61	9.95 27.29 28.16	18.04 40.00 41.11	30.21 54.13 55.17	19.40 40.47 41.48	45.09 44.42 44.00	61.48 60.90 60.57	74.11 73.72 73.58	59.68 59.39	2.71 11.44 11.91	5.82 19.62 20.22	11.40 29.80 30.54	6.65 20.29 20.89	17.65 17.34 17.11	30.44 29.88 29.51	45.84 44.95 44.70	31.31 30.72 30.44
+MAGSAC _† +MAGSAC _↓		94.67 96.50 96.87	63.81 59.90 56.68	16.39 25.63 26.54	28.00 40.60 41.36	41.61 56.73 57.80	28.67 40.99 41.90	36.23 35.97 36.21	55.58 55.82	71.96 71.98 72.12	54.59 54.51 54.72	80.43 84.85 86.33	60.92 62.94 62.92	50.75 38.99 34.98	4.11 5.65 6.15	11.15 14.60 14.60	21.40 26.49 26.17	12.22 15.58 15.64	9.87 10.48 9.78	21.51 22.68 21.43	35.19 36.12 35.19	22.19 23.09 22.14	78.02 85.81 88.20		41.67 26.65 7 22.06	15.47 27.55 27.97	25.53 42.70 42.54	30.97 49.47 49.12	28.41 36.59 35.43	73.00 74.99 76.24	89.43 91.46 91.70	66.58 61.49 58.31	19.67 26.15 26.95	31.15 39.38 40.38	44.22 53.30 54.34	31.68 39.61 40.56	40.75 40.38 40.58	57.55 57.30 57.37	70.96 70.65 70.67	56.42 56.11 56.21	9.96 10.47	13.11 17.96 18.74	22.20 28.48 29.26	14.01 18.80 19.49	15.01 14.86 14.94	27.04 26.60 26.80	41.91 41.40 41.63	27.99 27.62 27.79
$+MAGSAC_{\uparrow}$ $+MAGSAC_{\downarrow}$	52.29 55.34	89.57 95.02 95.45	83.43 78.37				10.20 55.92 57.54	45.66 46.43 46.12	63.52 63.91 63.80	76.96 77.05 77.29		70.50 81.18 83.37	52.42 58.70 58.72	61.97 43.71 38.59	0.72 8.45 8.06	2.34 17.37 17.10	6.85 27.37 27.41	3.30 17.73 17.52	10.50 10.78 10.70	22.76 22.93 22.79	36.09 35.63 35.76	23.12 23.12 23.08	50.12 69.68 76.07	71.61 72.01	76.18 1 47.93 1 37.87		43.16 49.60 49.65	48.38 54.92 55.28	49.83 47.22 44.79	61.15 66.65 68.66	81.01 85.80 86.12	79.03 71.36 67.24	3.45 31.07 31.86	7.30 42.48 43.33	14.71 53.82 54.50	8.49 42.46 43.23	43.65 43.18 43.18	58.42 58.03 57.95	69.53 69.29 69.23	57.20 56.83 56.79	1.36 14.88 15.87	3.03 23.41 24.07	6.45 33.29 34.13	3.61 23.86 24.52	18.25 18.22 18.22	30.60 30.18 30.29	44.80 44.22 44.21	31.22 30.87 30.91
$+MAGSAC_{\uparrow}$ $+MAGSAC_{\downarrow}$	51.68 54.83	85.29 95.72 96.24		42.87	55.46 56.90	68.13 69.90	3.85 55.16 56.56	47.70 47.43	65.44 65.31	79.22 78.89 78.58	64.82 64.01 63.77	59.34 79.39 81.78		74.68 48.41 42.67	0.06 7.62 8.30	0.43 16.66 17.53	2.32 27.33 28.72	0.94 17.21 18.18	11.79 11.51 11.58	24.56 24.01 23.95	38.04 37.47 37.47	24.80 24.33 24.33	46.99 69.47 75.64		7 78.60 1 49.26 8 39.36		30.68 48.30 48.99	35.35 54.35 54.34	41.52 46.73 44.71	55.98 65.42 67.63	76.16 86.81 87.20	74.78 70.19	0.94 30.78 31.71	2.61 41.73 42.90	7.30 52.71 53.89	3.62 41.74 42.83	46.34 44.89 44.95	61.20 59.98 59.96	72.34 71.47 71.35	59.96 58.78 58.75	0.48 14.53 15.17	1.36 22.95 23.63	3.45 32.57 33.39	1.76 23.35 24.07	18.99 18.66	32.63 31.51 31.11	47.20 45.86 45.52	33.10 32.12 31.77
$+MAGSAC_{\downarrow}$	51.05 53.11	84.49 95.69 96.11	95.05 86.17 82.65	0.93 40.25 41.73	54.90		3.58 53.29 54.66	48.06 46.26 47.89	64.29 65.32	79.40 77.98 78.40	62.84 63.87	59.34 78.57 80.50	45.04 59.97 60.02	75.17 50.18 45.40	0.05 8.27 8.11		2.30 29.07 29.14	0.91 18.38 18.30	13.03 12.64 11.44	25.43 25.19 23.94	39.32 38.63 37.53	25.49 25.49 24.30	46.99 61.66 66.99	73.03 73.47	81.47 63.66 7 55.16		30.49 49.96 50.18	35.03 55.28 55.44	42.17 51.26 49.32	55.98 65.45 67.01	75.17 86.48 86.83	83.85 74.20 70.91	0.77 29.34 30.32	2.35 40.03 41.17	7.00 50.97 52.10	3.38 40.11 41.20	46.32 44.82 44.09	61.12 59.79 59.13	72.14 71.21 70.61	59.86 58.61 57.94	0.45 13.74 14.17	1.31 21.75 22.49	3.38 31.23 32.26	1.71 22.24 22.97	19.77 19.09 18.56	32.61 31.42 30.79	47.12 45.64 44.95	32.05 31.43
$+MAGSAC_{\uparrow}$ $+MAGSAC_{\downarrow}$	44.18 51.63 53.60	88.74 95.03 95.35	91.81 84.32 80.95	3.52 40.41 40.94	54.28 55.08	66.96 67.79	9.31 53.88 54.61	46.62 46.12 46.29		77.42 77.36 77.51	62.72 62.49 62.63			41.74	0.62 8.51 8.84	2.12 17.65 18.12	6.54 28.29 28.63	3.09 18.15 18.53	11.80 11.83 11.29	24.25 23.76 23.50	37.10 36.29 36.47	24.38 23.96 23.75	50.12 61.70 67.14		54.12	35.31	49.10	48.02 55.06 54.72	50.01 80.57 48.31	61.15 66.62 67.97	80.02 85.64 85.89	78.16 71.16 68.33	2.51 30.29 30.98	5.87 41.27 42.06	12.83 52.35 53.16	7.07 41.30 42.07	44.05 43.07 42.93	58.63 57.63 57.61	69.49 68.76 68.71	57.39 56.49 56.42	1.07 14.34 14.82	2.59 22.64 23.23	5.69 32.33 32.91	3.12 23.10 23.65	18.54 18.09 17.95	31.05 30.19 30.01	45.20 44.20 43.92	31.60 30.83 30.63
+NCC +MAGSAC _† +MAGSAC _↓		52.70 92.67 93.27				54.74	0.30 42.69 44.05	44.66 43.09	61.83 62.76 61.75	75.41 76.91 76.33		0.00 78.30 80.79	24.93 55.18 55.39		0.00 5.52 5.54	0.05 12.49 12.82	0.38 22.52 22.73	0.14 13.51 13.70	9.92 10.33 10.13	20.95 21.86 21.26	33.05 34.76 33.79			43.61 74.43 74.34				54.90	22.69 47.08 43.96	0.00 64.41 66.88		97.92 73.18 68.09	0.01 21.02 22.18	0.08 30.85 32.06	0.55 41.65 42.64	0.21 31.17 32.29			67.80 69.49 68.67	54.86 56.02 55.14	0.03 8.98 9.61	0.12 15.24 16.19	0.63 23.52 24.67	0.26 15.91 16.82	17.64 17.53 17.29	29.25 29.11 28.60	42.84 42.79 42.13	29.91 29.81 29.34