Pipeline	Filtered	Precision	Recall	$AUC_{\alpha s}^{F}$	AUC <sup>F</sup>	MegaDept $AUC_{0:20}^F$	h AUC <sup>F</sup>	$AUC_{\alpha}^{E}$	$AUC_{ava}^{E}$	$AUC_{nm}^{E}$	AUC <sup>E</sup>	Filtered	Precision	Recall	$AUC_{\alpha s}^{F}$	$AUC_{010}^F$	ScanNet AUC <sup>F</sup>	AUC <sup>F</sup>	$AUC_{\alpha s}^{E}$	$AUC_{010}^{E}$	$AUC_{oon}^{E}$	$AUC_{\ell}^{E}$
SIFT+NNR	0.00	53.92	99.99	0.11	0.19	0.75	0.35	46.30	63.50	76.97	62.26	0.00	24.83	99.19	0.00	0.10	0.48	0.19	8.83	19.70	32.52	20.35
$^{+ \rm MAGSAC_{\uparrow}}_{+ \rm MAGSAC_{\downarrow}}$	50.73	93.13	85.12	33.02	45.96	57.85	45.61	45.23	64.51	78.42	62.72	78.54	55.20	46.06	5.93	14.28	24.77	14.99	10.77	22.27	35.12	22.72
	54.16	93.72	79.31	35.07	48.12	60.06	47.75	46.29	64.74	77.96	63.00	81.20	55.13	40.06	6.31	14.33	24.88	15.17	10.91	22.33	34.66	22.63
+ACNe	47.62	92.54	90.85	12.73	28.08	47.64	29.48	46.58	65.19	78.99	63.59	67.86	55.02	70.85	3.15	10.94	24.98	13.02	12.49	26.10	40.82	26.47
$+MAGSAC\uparrow$	53.26	96.38	83.41	39.43	55.32	69.98	54.91	47.27	65.28	79.02	63.86	80.20	60.44	47.25	7.96	18.00	31.28	19.08	12.65	25.65	39.95	26.08
$+MAGSAC\downarrow$	56.21	96.80	78.33	39.86	55.72	70.42	55.34	43.82	63.61	78.16	61.87	82.44	60.41	41.59	8.27	18.92	32.35	19.84	12.29	24.96	39.50	25.58
+AdaLAM	82.56	93.44	27.42	7.64	14.75	27.12	16.50	37.77	54.58	68.59	53.65	92.54	53.27	15.01	1.02	2.77	6.11	3.30	6.40	13.73	22.79	14.31
$+$ MAGSAC $_{\uparrow}$	83.62	92.29	26.13	33.41	47.09	60.63	47.05	36.06	53.19	66.99	52.08	94.09	46.65	12.11	4.69	10.27	17.84	10.93	5.40	12.31	21.38	13.03
$+$ MAGSAC $_{\downarrow}$	84.22	92.53	25.25	33.39	46.84	60.62	46.95	35.33	52.27	66.81	51.47	94.54	46.67	11.21	5.10	10.95	18.37	11.47	6.58	13.67	22.63	14.29
$^{+\mathrm{CC}}_{+\mathrm{MAGSAC}_\uparrow}_{+\mathrm{MAGSAC}_\downarrow}$	45.92	92.27	89.48	13.99	24.45	37.80	25.42	44.34	62.09	75.45	60.63	40.75	51.34	<b>80.93</b>	1.83	4.66	9.77	5.42	8.70	18.89	30.77	19.45
	53.76	96.23	80.73	37.74	52.70	66.78	52.41	44.24	62.36	76.12	60.91	81.65	58.58	40.46	5.25	11.67	20.40	12.44	8.74	18.59	30.82	19.38
	56.71	96.66	75.81	38.54	53.14	67.33	53.00	43.35	61.61	75.62	60.19	83.72	58.57	35.76	5.39	11.74	20.68	12.61	8.73	18.86	31.05	19.54
+CLNet	48.44	91.36	88.00	3.09	6.91	16.55	8.85	40.97	60.35	75.36	58.89	77.43	57.74	52.39	0.47	2.16	6.81	3.14	9.04	19.84	32.09	20.32
$+MAGSAC_{\uparrow}$	55.27	96.13	79.18	27.94	42.25	58.04	42.74	38.46	58.02	73.88	56.79	83.73	60.98	39.26	4.32	10.17	19.92	11.47	8.43	19.07	31.89	19.80
$+MAGSAC_{\downarrow}$	58.21	96.62	74.21	28.64	43.05	59.18	43.62	39.87	59.55	75.00	58.14	85.55	60.69	34.66	4.35	10.07	19.56	11.33	9.07	19.44	31.53	20.02
$+ ConvMatch \\ + MAGSAC_{\uparrow} \\ + MAGSAC_{\downarrow}$	56.91	90.02	79.68	16.08	28.10	43.04	29.07	41.14	59.35	73.49	58.00	69.76	56.68	69.88	2.07	6.48	16.45	8.34	12.01	24.63	38.01	24.88
	62.34	93.59	71.70	32.80	47.32	61.06	47.06	42.08	59.64	73.54	58.42	81.19	61.67	46.43	7.64	17.39	29.31	18.11	11.50	24.33	38.16	24.66
	64.73	93.97	67.25	33.49	47.40	61.27	47.39	41.63	59.77	73.91	58.44	83.33	61.60	41.06	7.78	17.46	29.39	18.21	11.07	23.95	37.89	24.31
+DeMatch	52.50	91.49	83.88	14.78	25.25	38.92	26.32	40.93	60.73	76.16	59.27	70.29	55.68	67.41	1.78	5.04	13.31	6.71	10.04	22.49	36.63	23.05
+MAGSAC $\uparrow$	58.50	96.01	75.48	30.26	44.01	59.49	44.59	41.19	59.97	74.99	58.71	81.68	60.69	44.51	6.16	14.71	25.57	15.48	10.72	23.18	36.49	23.47
+MAGSAC $\downarrow$	61.09	96.46	70.94	31.19	45.29	60.36	45.61	41.18	60.88	75.85	59.30	83.77	60.63	39.21	6.34	15.14	26.25	15.91	9.90	21.84	35.45	22.40
$^{+\text{FC-GNN}}_{+\text{MAGSAC}_{\uparrow}}$ $^{+\text{MAGSAC}_{\downarrow}}$	50.09	95.31	85.43	15.72	24.91	38.87	26.50	48.23	65.95	78.80	64.33	79.85	63.72	47.64	4.19	10.42	19.18	11.26	12.01	24.37	38.30	24.89
	51.75	97.09	83.75	47.35	<b>61.26</b>	73.34	60.65	47.50	65.45	78.49	63.81	81.73	64.92	43.67	9.65	19.75	<b>31.44</b>	20.28	12.24	24.66	38.38	25.09
	52.51	97.20	82.43	47.12	<b>61.38</b>	73.28	60.59	47.16	65.20	78.43	63.60	82.55	64.99	41.70	9.60	19.54	31.12	20.08	12.04	25.31	38.86	25.40
+MAGSAC <sub>↑</sub> +MAGSAC <sub>↓</sub>	57.35 62.35 64.63	86.98 88.86 89.16	65.58 59.80 56.37	5.10 36.56 37.20	10.75 48.66 49.16	22.47 60.14 60.09	12.77 48.45 48.82	37.04 35.61 37.35	53.51 52.32 53.89	66.38 65.44 66.66	52.31 51.12 52.63	87.17 89.96 90.91	51.99 47.93 47.92	25.55 20.55 18.62	0.99 3.16 2.95	3.30 7.98 7.57	7.36 13.90 13.58	3.88 8.34 8.04	4.41 4.29 4.23	10.83 10.54 10.41	18.97 18.83 18.94	11.40 11.22 11.19
$+MS^2DG\text{-Net}$	65.89	81.13	57.55	0.08	0.47	2.32	0.96	36.29	53.60	67.96	52.62	68.23	43.13	57.12	0.00	0.17	0.83	0.33	8.65	18.88	30.45	19.33
$+MAGSAC_\uparrow$	72.85	91.36	51.69	29.38	43.00	56.55	42.98	34.93	51.88	66.45	51.08	85.37	56.58	35.26	5.24	11.75	20.69	12.56	8.82	19.00	31.25	19.69
$+MAGSAC_\downarrow$	74.45	91.80	48.72	29.92	43.16	56.64	43.24	35.12	52.73	67.78	51.88	86.90	56.47	31.24	5.47	11.61	20.13	12.40	8.34	18.03	29.66	18.68
+NCC	0.00	53.09	97.88	0.11	0.19	0.74	0.35	44.66	61.89	75.50	60.68	0.00	24.54	100.29	0.00	0.10	0.47	0.19	10.18	21.17	32.98	21.44
+MAGSAC↑	51.39	92.48	82.89	30.83	42.77	54.19	42.60	44.69	63.21	77.48	61.79	78.72	54.97	46.19	5.77	13.07	23.07	13.97	10.64	22.42	35.60	22.88
+MAGSAC↓	54.41	93.13	77.91	31.92	44.06	55.41	43.80	43.18	62.07	76.78	60.68	81.20	55.11	40.69	5.87	13.29	23.54	14.24	10.38	21.91	34.47	22.25
+NCMNet	48.02	91.08	88.31	4.03	8.75	18.93	10.57	41.33	61.17	76.33	59.61	76.49	57.99	54.06	1.42	3.98	10.40	5.27	9.91	21.05	33.56	21.51
$+MAGSAC\uparrow$	55.02	95.86	79.26	30.59	44.43	58.42	44.48	39.97	59.57	75.11	58.22	82.91	61.02	40.65	4.29	11.15	20.90	12.11	9.43	20.77	33.69	21.30
$+MAGSAC\downarrow$	57.95	96.28	74.26	30.86	44.88	59.48	45.07	40.25	59.47	74.90	58.21	84.77	60.88	36.13	4.78	11.15	21.21	12.38	8.85	19.43	32.38	20.22
+OANet	66.72	94.73	63.21	15.00	26.42	40.02	27.15	37.07	56.26	72.20	55.18	80.63	60.42	50.20	3.33	9.56	20.06	10.98	10.49	22.24	35.72	22.82
$+MAGSAC_{\uparrow}$	69.12	96.60	59.31	25.78	40.23	56.30	40.77	35.40	55.52	72.35	54.42	85.12	62.45	38.62	5.86	14.72	26.58	15.72	11.16	23.95	37.11	24.07
$+MAGSAC_{\downarrow}$	70.83	<b>97.01</b>	56.17	26.09	40.89	57.32	41.43	36.76	57.02	73.20	55.66	86.61	62.49	34.55	6.10	14.34	26.21	15.55	10.33	21.99	35.34	22.55
	40.99	86.84	94.39	1.60	4.22	10.55	5.46	<b>50.22</b>	<b>67.35</b>	79.88	<b>65.81</b>	62.61	46.07	70.76	0.15	0.67	3.04	1.29	11.77	24.67	38.26	24.90
	51.61	95.60	84.33	42.56	55.94	68.78	55.76	49.58	66.13	78.28	64.66	80.23	59.20	46.63	8.51	17.34	28.11	17.99	11.77	23.85	37.07	24.23
	54.72	96.05	79.18	44.04	57.81	70.44	57.43	48.15	65.78	78.36	64.09	82.56	59.21	40.95	8.81	18.09	28.79	18.56	12.18	24.35	37.42	24.65
$+ \begin{aligned} & + MOP_{0.5K} + MiHo + NCC \\ & + MAGSAC_{\uparrow} \\ & + MAGSAC_{\downarrow} \end{aligned}$	40.99	85.87	93.44	1.43	4.02	10.09	5.18	47.26	64.20	77.69	63.05	62.61	45.76	71.09	0.22	0.69	3.14	1.35	11.66	24.26	37.15	24.36
	51.03	95.40	84.84	41.19	54.90	67.33	54.48	47.80	65.12	78.30	63.74	79.50	59.10	48.24	8.45	17.91	28.64	18.34	11.85	23.86	37.48	24.39
	53.07	95.77	81.34	41.65	55.53	68.05	55.08	47.21	65.09	78.20	63.50	81.41	58.98	43.43	8.05	17.36	28.59	18.00	11.28	23.63	37.42	24.11
+MAGSAC <sub>↓</sub>	40.16 51.49 54.65	85.97 95.62 96.14	95.16 84.83 79.59	1.60 42.84 44.10	4.10 56.67 57.99	9.86 68.94 70.50	5.19 56.15 57.53	48.18 48.97 48.12	66.10 66.18 65.81	78.90 78.79 78.70	64.40 64.64 64.21	61.10 79.98 82.35	45.38 59.21 59.21	72.75 47.36 41.59	7.88 8.51	0.50 16.74 17.57	2.57 27.75 28.83	1.06 17.45 18.30	11.83 12.20 11.88	25.18 23.51 23.16	38.91 36.50 36.50	25.31 24.07 23.85
$+ \begin{aligned} & + MOP_{1.0K} + MiHo + NCC \\ & + MAGSAC_{\uparrow} \\ & + MAGSAC_{\downarrow} \end{aligned}$	40.16	85.09	94.29	1.47	3.89	9.35	4.91	48.62	66.73	79.53	64.96	61.10	45.13	73.14	0.20	0.59	2.57	1.12	12.07	25.03	38.51	25.21
	50.83	95.62	85.64	41.38	54.93	67.84	54.72	47.31	64.74	78.47	63.50	79.26	59.22	48.92	7.97	17.75	29.08	18.27	11.90	24.04	37.38	24.44
	52.90	95.97	82.06	43.48	56.85	69.22	56.52	46.85	64.72	77.86	63.14	81.13	59.47	44.49	8.36	17.85	29.17	18.46	12.26	24.45	37.66	24.79
+MAGSAC↓	39.76	85.77	95.68	1.53	3.60	9.41	4.84	<b>50.24</b>	<b>67.62</b>	<b>80.22</b>	<b>66.03</b>	60.17	45.06	73.89	0.10	0.55	2.96	1.20	12.82	25.31	38.91	25.68
	51.47	95.75	85.12	40.99	55.15	68.18	54.77	49.63	67.24	79.94	65.60	79.86	59.66	47.81	8.81	18.87	30.22	19.30	12.89	25.99	39.04	<b>25.97</b>
	54.62	96.25	79.91	43.02	56.66	69.72	56.47	48.65	66.10	79.03	64.59	82.20	59.75	42.19	9.15	19.21	30.33	19.56	12.67	25.76	38.75	25.72
$\begin{array}{l} + \text{MOP}_{1.5K} + \text{MiHo} + \text{NCC} \\ + \text{MAGSAC}_{\uparrow} \\ + \text{MAGSAC}_{\downarrow} \end{array}$	39.76	84.94	94.84	1.42	3.28	8.85	4.52	47.85	65.88	79.52	64.42	60.17	44.79	74.20	0.12	0.48	2.84	1.14	12.09	24.25	37.58	24.64
	50.80	95.65	85.93	39.75	53.09	65.72	52.85	48.09	66.29	79.37	64.58	79.11	59.23	49.10	8.03	17.95	29.48	18.49	11.76	24.58	37.85	24.73
	52.84	96.07	82.40	40.92	54.37	67.05	54.11	47.24	65.24	78.50	63.66	81.00	59.32	44.47	8.43	17.74	29.44	18.54	11.60	24.56	37.84	24.67
+MAGSAC <sub>↓</sub>	39.47	85.41	95.84	1.30	2.81	7.95	4.02	<b>50.38</b>	<b>67.36</b>	79.87	<b>65.87</b>	59.64	44.60	74.31	0.07	0.46	2.56	1.03	11.83	24.90	38.74	25.16
	51.37	95.75	85.33	42.38	55.75	68.31	55.48	49.33	67.18	<b>80.00</b>	65.50	79.81	59.57	47.99	8.20	17.72	28.01	17.98	12.39	24.95	38.55	25.30
	54.55	96.24	80.02	43.11	56.76	69.75	56.54	47.85	65.99	79.05	64.29	82.19	59.62	42.21	8.89	18.16	29.35	18.80	12.19	24.42	37.98	24.86
$+MOP_{2,0K}+MiHo+NCC$	39.47	84.57	94.97	1.15	2.55	7.35	3.69	48.94	67.06	80.60	65.53	59.64	44.45	74.87	0.07	0.43	2.55	1.02	13.08	25.33	39.05	25.82
$+MAGSAC_{\uparrow}$	50.72	95.64	86.06	40.76	54.01	66.70	53.82	47.56	65.56	79.02	64.05	79.00	59.25	49.46	8.02	17.42	28.31	17.92	12.47	25.08	38.32	25.29
$+MAGSAC_{\downarrow}$	52.78	96.02	82.51	42.72	55.71	67.79	55.41	48.33	66.16	79.47	64.65	80.92	59.27	44.63	8.20	17.53	28.79	18.17	11.47	23.80	37.40	24.23
$+MOP_{0.5K}$	44.87	89.73	90.19	4.16	9.43	19.06	10.88	45.11	62.78	75.65	61.18	72.05	51.19	58.43	0.65	2.21	6.24	3.04	10.56	22.59	35.30	22.82
$+MAGSAC\uparrow$	52.43	94.47	81.52	41.95	55.78	68.36	55.36	46.79	64.67	77.24	62.90	82.05	57.09	41.38	7.75	16.08	25.84	16.56	10.54	21.37	34.11	22.01
$+MAGSAC\downarrow$	55.50	94.91	76.53	43.21	56.33	68.76	56.10	46.23	63.67	76.87	62.26	84.15	57.31	36.57	8.11	16.73	27.10	17.31	10.79	22.43	35.01	22.75
$+MAGSAC_{\uparrow}$ $+MAGSAC_{\downarrow}$	44.87 51.85 53.76	88.78 94.36 94.65	89.44 82.28 79.05	3.17 40.00 41.35	7.96 54.42 55.25	17.47 67.46 68.18	9.53 53.96 54.93	43.50 45.99 45.14	61.60 63.45 62.62	75.08 76.18 75.72	60.06 61.87 61.16	72.05 81.27 82.85	50.76 57.14 57.17	58.26 43.09 39.29	0.63 7.30 7.95	1.84 16.61 16.87	5.49 26.31 26.78	2.65 16.74 17.20	11.62 10.63 11.22	23.04 22.16 22.61	35.38 34.98 34.30	23.35 22.59 22.71
$+MOP_{1.0K}$	44.22	89.71	91.54	4.06	8.48	17.76	10.10	48.15	65.30	77.60	63.68	71.35	51.58	60.29	0.72	1.89	5.80	2.80	10.85	22.27	35.02	22.71
$+MAGSAC_{\uparrow}$	52.13	94.90	82.60	43.05	56.46	69.14	56.21	47.61	65.02	77.82	63.48	81.80	57.92	42.56	8.27	17.02	27.41	17.57	11.53	23.34	36.11	23.66
$+MAGSAC_{\downarrow}$	55.26	95.30	77.47	42.54	56.23	69.30	56.02	45.99	64.04	77.37	62.47	83.90	58.03	37.59	8.97	17.83	28.21	18.34	11.28	23.18	36.08	23.52
$\begin{aligned} &+ \mathbf{MOP_{1.0K}} + \mathbf{NCC} \\ &+ \mathbf{MAGSAC_{\uparrow}} \\ &+ \mathbf{MAGSAC_{\downarrow}} \end{aligned}$	44.22	88.78	90.75	3.35	7.28	16.21	8.95	44.93	63.10	76.51	61.52	71.35	51.13	60.09	0.76	1.81	5.68	2.75	11.81	23.55	35.86	23.74
	51.51	94.85	83.39	40.18	54.38	67.41	53.99	47.33	64.97	77.42	63.24	80.97	57.81	44.22	8.07	16.92	26.61	17.20	11.80	23.77	36.51	24.03
	53.47	95.14	80.06	40.42	54.84	68.08	54.44	45.32	63.15	76.81	61.76	82.60	57.91	40.35	8.36	16.91	27.14	17.47	11.81	23.56	36.15	23.84
$\begin{aligned} &+ \mathbf{MOP}_{1.5K} \\ &+ \mathbf{MAGSAC}_{\uparrow} \\ &+ \mathbf{MAGSAC}_{\downarrow} \end{aligned}$	43.99	89.85	92.21	4.32	8.91	18.00	10.41	46.85	64.12	77.12	62.70	71.14	52.13	61.15	0.75	2.63	6.79	3.39	11.53	23.57	36.51	23.87
	51.99	95.08	83.20	43.38	56.80	69.59	56.59	48.00	65.25	78.08	63.78	81.66	58.30	43.05	8.30	17.63	28.01	17.98	11.24	23.38	36.20	23.61
	55.09	95.53	78.10	43.53	56.99	70.38	56.97	47.33	64.58	77.59	63.17	83.80	58.38	38.00	8.46	18.12	28.67	18.42	11.47	23.08	35.89	23.48
$+MOP_{1.5K}+NCC$	43.99	89.00	91.47	4.12	8.15	16.68	9.65	45.83	63.99	77.25	62.36	71.14	51.71	60.94	0.64	2.31	6.67	3.20	11.13	23.35	35.85	23.44
$+MAGSAC_{\uparrow}$	51.33	95.07	84.06	41.05	55.41	68.53	55.00	46.32	64.24	77.27	62.61	80.83	58.39	44.96	8.17	17.33	28.13	17.88	12.69	24.75	37.55	25.00
$+MAGSAC_{\downarrow}$	53.34	95.38	80.66	42.24	56.36	69.23	55.94	46.68	64.92	78.01	63.20	82.52	58.58	40.93	8.29	17.59	28.11	18.00	11.85	24.04	36.58	24.16
$+MOP_{2.0K}$	43.80	89.72	92.58	3.97	8.56	18.00	10.18	45.72	63.98	77.30	62.33	70.90	52.18	61.58	0.61	2.10	6.34	3.02	10.77	23.27	36.92	23.66
$+MAGSAC_{\uparrow}$	51.91	95.12	83.51	43.61	56.56	69.40	56.52	48.32	66.30	78.80	64.47	81.58	58.64	43.36	8.36	17.47	27.44	17.76	11.46	23.89	36.49	23.95
$+MAGSAC_{\downarrow}$	55.00	95.56	78.42	<b>44.39</b>	<b>58.26</b>	<b>70.78</b>	<b>57.81</b>	47.87	65.35	78.15	63.79	83.78	58.68	38.05	8.45	17.71	28.09	18.09	11.19	23.23	36.05	23.49
$+MOP_{2.0K}+NCC$	43.80	88.83	91.80	3.39	7.57	16.62	9.20	47.12	65.13	78.30	63.51	70.90	51.81	61.44	0.56	2.15	6.57	3.09	11.61	24.04	36.78	24.14
$+MAGSAC_{\uparrow}$	51.28	95.05	84.28	41.66	55.61	68.08	55.12	47.31	65.16	78.16	63.54	80.73	58.74	45.34	8.46	17.91	28.63	18.33	12.36	24.37	37.01	24.58
$+MAGSAC_{\downarrow}$	53.27	95.35	80.84	41.58	55.76	68.54	55.29	45.31	64.01	77.83	62.39	82.43	58.79	41.20	9.33	18.62	29.11	19.02	11.94	24.34	37.33	24.53