Table 8. Main experiments

Methods	Synthetic	MO-NAS	MORL	MOCO	Sci-Design	RE	Average Rank
$\mathcal{D}$(best)	11.36 ± 0.11	11.21 ± 0.47	5.00 ± 1.00	$\mathbf{1.58 \pm 0.12}$	6.62 ± 0.62	7.73 ± 0.00	8.21 ± 0.18
End-to-End	6.47 ± 0.09	7.05 ± 0.05	5.00 ± 2.50	4.27 ± 0.09	4.17 ± 0.33	5.44 ± 0.17	5.86 ± 0.19
End-to-End + GradNorm	8.73 ± 0.39	6.71 ± 0.13	7.25 ± 2.75	5.92 ± 0.08	7.17 ± 0.33	10.42 ± 0.14	7.62 ± 0.20
End-to-End + PcGrad	8.19 ± 0.81	7.05 ± 0.16	9.75 ± 0.25	6.12 ± 0.38	6.69 ± 0.44	7.56 ± 0.33	7.29 ± 0.33
Multi-Head	$\underline{5.34 \pm 1.16}$	4.63 ± 0.47	10.75 ± 0.25	6.77 ± 0.15	5.25 ± 1.12	7.31 ± 0.19	5.79 ± 0.48
Multi-Head + GradNorm	8.09 ± 1.25	10.12 ± 0.20	5.88 ± 1.38	7.69 ± 0.15	10.69 ± 0.31	8.06 ± 1.06	8.69 ± 0.42
Multi-Head + PcGrad	8.44 ± 0.38	8.68 ± 0.05	9.25 ± 0.25	7.38 ± 0.08	9.25 ± 0.12	7.75 ± 0.31	8.20 ± 0.13
Multiple Models	$\mathbf{3.62 \pm 0.31}$	$\underline{3.54 \pm 0.07}$	7.38 ± 3.12	4.45 ± 0.25	$\underline{3.94 \pm 1.06}$	$\mathbf{2.28 \pm 0.06}$	$\mathbf{3.62 \pm 0.02}$
Multiple Models + COMs	9.34 ± 0.34	7.47 ± 0.11	$\underline{3.00 \pm 0.50}$	4.44 ± 0.00	7.69 ± 0.69	10.56 ± 0.06	7.85 ± 0.06
Multiple Models + RoMA	8.34 ± 0.22	6.64 ± 0.25	5.00 ± 0.50	7.00 ± 0.33	9.38 ± 0.62	5.81 ± 0.31	7.12 ± 0.00
Multiple Models + IOM	6.22 ± 0.63	$\mathbf{3.38 \pm 0.09}$	/	$\underline{3.50 \pm 0.25}$	/	$\underline{2.73 \pm 0.13}$	$\underline{4.28 \pm 0.23}$
Multiple Models + ICT	8.56 ± 0.19	11.68 ± 0.24	5.00 ± 0.00	9.29 ± 0.14	4.00 ± 0.00	7.78 ± 0.89	9.13 ± 0.15
Multiple Models + Tri-Mentoring	7.77 ± 0.10	11.65 ± 0.07	$\mathbf{1.00 \pm 0.00}$	9.43 ± 0.43	9.25 ± 0.75	7.11 ± 0.33	8.83 ± 0.03
MOBO	8.33 ± 0.33	6.05 ± 0.47	6.75 ± 0.25	10.50 ± 0.10	$\mathbf{3.50 \pm 0.25}$	7.08 ± 0.08	7.43 ± 0.27
MOBO-ParEGO	10.89 ± 0.11	11.70 ± 0.30	N/A	8.62 ± 0.12	5.62 ± 1.62	6.08 ± 0.38	9.40 ± 0.28
MOBO-JES	11.30 ± 0.30	N/A	N/A	N/A	6.50 ± 5.50	5.40 ± 0.30	8.18 ± 0.77