

Method	Income	Marital	Education	Average	$\Delta m\%$	MR
Single-task	0.9454 \pm 0.0003	0.9817 \pm 0.0005	<u>0.8875\pm0.0010</u>	0.9382 \pm 0.0006	0.00	4.33
Uniform scaling	0.9407 \pm 0.0007	0.9763 \pm 0.0013	0.8829 \pm 0.0008	0.9333 \pm 0.0009	0.52	13.00
GradNorm	0.9435 \pm 0.0007	0.9829 \pm 0.0012	0.8873 \pm 0.0006	0.9379 \pm 0.0008	0.03	6.00
PCGrad	0.9428 \pm 0.0010	0.9812 \pm 0.0014	0.8856 \pm 0.0006	0.9365 \pm 0.0010	0.18	11.00
GradVac	0.9436 \pm 0.0008	0.9798 \pm 0.0015	0.8856 \pm 0.0012	0.9363 \pm 0.0012	0.20	10.33
MGDA	0.9460\pm0.0005	0.9833 \pm 0.0008	0.8870 \pm 0.0007	<u>0.9388\pm0.0006</u>	<u>-0.06</u>	<u>3.00</u>
CAGrad	0.9444 \pm 0.0009	0.9820 \pm 0.0015	0.8863 \pm 0.0009	0.9376 \pm 0.0011	0.07	7.00
IMTL-G	0.9443 \pm 0.0010	0.9826 \pm 0.0015	0.8864 \pm 0.0009	0.9378 \pm 0.0011	0.05	6.33
GradOPS($\alpha=0$)	0.9436 \pm 0.0009	0.9817 \pm 0.0015	0.8861 \pm 0.0012	0.9371 \pm 0.0012	0.12	9.33
GradOPS($\alpha=2$)	0.9432 \pm 0.0013	0.9769 \pm 0.0015	0.8864 \pm 0.0012	0.9355 \pm 0.0013	0.28	10.33
GradOPS($\alpha=-1$)	0.9443 \pm 0.0006	0.9832 \pm 0.0006	0.8866 \pm 0.0006	0.9380 \pm 0.0006	0.02	5.67
GradOPS($\alpha=-2$)	0.9453 \pm 0.0008	<u>0.9837\pm0.0005</u>	0.8871 \pm 0.0008	0.9387 \pm 0.0007	-0.05	3.33
GradOPS($\alpha=-3$)	<u>0.9459\pm0.0004</u>	0.9854\pm0.0007	0.8876\pm0.0002	0.9396\pm0.0005	-0.15	1.33

Table 1: Complete experiment results (mean and standard deviation) on UCI Census-income dataset. The best scores are shown in bold and the second-best scores are underlined. Methods that achieved significant improvements over Single-task results are highlighted with grey background (we use a significance level of 0.05).