Shift type	ID Cov	ID Sem	C-1 Cov.	C-5 Cov.	iNat Sem.	OI Sem.
Deep ensemble	1.05 (1.10)	1.05 (1.10)	1.09 (1.11)	1.19 (1.11)	1.31 (1.10)	1.23 (1.10)
+Diverse hyperparams	1.04 (1.17)	1.04 (1.17)	1.11 (1.23)	1.32 (1.37)	1.48 (1.41)	1.33 (1.38)
Naive DivDis	1.02 (1.05)	1.02 (1.05)	1.04 (1.06)	1.14 (1.10)	1.19 (1.14)	1.16 (1.13)
Naive A2D	1.11 (1.15)	1.11 (1.15)	1.04 (1.04)	1.15 (1.10)	1.19 (1.15)	1.91 (1.49)
SED-A2D	**5.00 (3.98)**	**1.36 (1.54)**	**5.00 (4.16)**	**5.00 (4.46)**	**4.68 (4.06)**	**4.11 (3.53)**

Table 1: Diversity.

#layers	Ensemble Acc. Val	IN-A	IN-R	C-1	C-5	AUROC C-1	C-5	iNat	OI
1	85.2	42.3	**48.2**	**77.3**	**40.8**	0.677	0.889	0.964	0.928
2	**85.3**	**42.4**	48.1	**77.3**	40.6	**0.686**	**0.896**	**0.977**	**0.941**

Table 2: Trainable layers ablation.

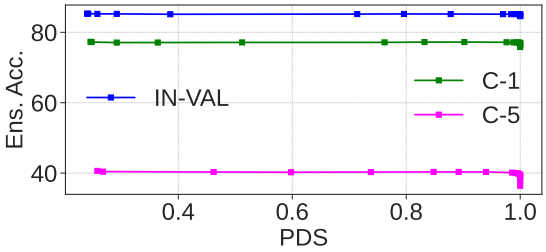

Table 3: Dependence between PDS and Ensemble Accuracy.

Shift type	η	ID Cov	ID Sem	C-1 Cov.	C-5 Cov.	iNat Sem.	OI Sem.
Single model	BMA	85.4	85.4	0.615	0.833	0.958	0.909
Deep Ensemble	BMA	85.5	85.5	0.619	0.835	0.958	0.911
+Diverse HPs	BMA	85.5	85.5	**0.642**	**0.861**	**0.969**	**0.923**
Naive DivDis	BMA	85.2	85.2	0.598	0.843	0.966	0.922
Naive A2D	BMA	84.7	85.2	0.594	0.835	0.966	0.916
SED-A2D	BMA	85.1	77.5	0.641	0.845	0.960	0.915
Deep Ensemble	PDS	85.5	85.5	0.565	0.625	0.592	0.589
+Diverse HPs	PDS	85.5	85.5	0.643	0.849	0.926	0.889
Naive DivDis	PDS	85.2	85.2	0.600	0.851	0.969	0.939
Naive A2D	PDS	85.2	85.2	0.599	0.850	0.971	0.939
SED-A2D	PDS	1.0	82.9	**0.686**	**0.896**	**0.977**	**0.941**

Table 4: OOD detection via ensembles.

Method	Ensemble Acc. Val	IN-A	IN-R	C-1	C-5	AUROC C-1	C-5	iNat	OI
Deep Ensemble	**69.8**	0.5	**20.8**	**51.9**	**14.6**	0.670	**0.869**	0.865	0.802
SED	69.6	0.6	**20.8**	51.8	**14.6**	**0.686**	0.860	**0.873**	**0.812**

Table 5: Ablation of architecture: ResNet18.

Type	Ensemble Acc. Val	IN-A	IN-R	C-1	C-5	AUROC C-1	C-5	iNat	OI
2-staged	85.2	**42.4**	**48.5**	**77.3**	**40.7**	0.597	0.845	0.960	0.911
Joint	**85.3**	**42.4**	48.1	**77.3**	40.6	**0.686**	**0.896**	**0.977**	**0.941**

Table 6: Comparison with 2-staged approach.

M	I	Epoch, s	Ensemble Acc. Val	IN-A	IN-R	C-1	C-5	AUROC C-1	C-5	iNat	OI
5	2	**53 ± 5**	**85.3**	**42.4**	**48.1**	**77.3**	**40.6**	0.686	0.896	**0.977**	**0.941**
5	3	388 ± 28	85.2	41.4	47.4	77.2	40.5	0.682	0.892	0.975	0.939
5	4	423 ± 3	85.2	40.3	46.8	77.1	40.4	0.703	0.898	0.973	0.940
5	5	585 ± 111	85.1	37.6	44.9	77.0	40.2	**0.711**	**0.903**	0.970	0.937
50	2	**2189 ± 86**	**83.7**	**50.1**	**54.0**	**75.9**	**39.4**	**0.600**	0.824	0.934	0.878
50	5	4213 ± 5	83.6	49.2	53.4	75.8	39.2	0.598	0.827	0.942	0.892
50	10	7244 ± 27	83.4	48.5	53.0	75.6	39.1	0.597	**0.828**	**0.945**	**0.896**

Table 7: Ablation of stochastic sum.

Method	OOD	Ensemble Acc. Val	IN-A	IN-R	C-1	C-5	AUROC C-1	C-5	iNat	OI
A2D	IN-A	**85.1**	**37.8**	**45.2**	**77.2**	**40.3**	0.599	0.850	0.971	0.936
A2D	IN-R	**85.1**	**37.8**	**45.2**	**77.2**	**40.3**	0.599	0.850	0.971	0.939
A2D	Synth	85.0	34.0	42.9	74.9	37.4	0.645	0.870	0.973	**0.941**
Div	IN-A	**85.1**	**37.8**	**45.2**	**77.2**	**40.3**	0.599	0.850	0.971	0.936
Div	IN-R	**85.1**	36.3	41.8	**77.2**	40.2	0.600	0.851	0.969	0.939
Div	Synth	85.0	34.0	42.9	74.9	37.4	**0.647**	**0.871**	**0.974**	**0.941**

Table 8: Ablation OOD dataset.