

Supplementary Material – Mind the Nuisance: Gaussian Process Classification using Privileged Noise

Table 1: Error rate performance on the AwA dataset over 100 repeated experiments. **SURF** image features as the **original** domain and **DeCAF** deep neural network image features as the **privileged** domain. The best methods for each binary task is highlighted in boldface.

	GPC	GPC+ (Ours)	SVM	SVM+
Chimp. v. Panda	15.93±0.15	15.86±0.15	16.90±0.15	16.22±0.14
Chimp. v. Leopard	14.74±0.13	14.69±0.12	15.28±0.15	15.10±0.12
Chimp. v. Cat	16.63±0.12	16.52±0.11	17.34±0.11	16.97±0.11
Chimp. v. Pig	19.82±0.23	19.48±0.26	20.52±0.27	20.04±0.25
Chimp. v. Hippo.	18.99±0.11	18.67±0.11	19.57±0.11	19.20±0.11
Chimp. v. Whale	5.72±0.08	5.79±0.08	6.22±0.11	5.85±0.10
Chimp. v. Raccoon	19.60±0.13	19.65±0.13	20.03±0.14	19.86±0.13
Chimp. v. Rat	19.94±0.27	19.79±0.26	21.53±0.30	20.45±0.27
Chimp. v. Seal	14.10±0.12	14.01±0.12	14.94±0.12	14.34±0.13
Panda v. Leopard	14.19±0.12	14.26±0.13	14.85±0.15	14.59±0.15
Panda v. Cat	12.96±0.12	12.99±0.12	14.26±0.13	13.52±0.13
Panda v. Pig	20.23±0.23	20.17±0.22	22.54±0.29	20.85±0.24
Panda v. Hippo.	15.47±0.12	15.45±0.13	16.89±0.17	15.70±0.14
Panda v. Whale	5.00±0.09	5.20±0.09	5.73±0.11	4.95±0.09
Panda v. Raccoon	17.03±0.13	17.04±0.13	18.37±0.18	17.54±0.14
Panda v. Rat	17.09±0.24	17.27±0.23	20.06±0.30	18.04±0.25
Panda v. Seal	14.13±0.13	14.01±0.12	15.16±0.17	14.22±0.13
Leopard v. Cat	12.08±0.11	11.77±0.09	11.79±0.08	11.82±0.09
Leopard v. Pig	20.97±0.24	21.12±0.24	21.88±0.24	21.79±0.26
Leopard v. Hippo.	16.10±0.14	15.89±0.13	16.36±0.13	16.27±0.14
Leopard v. Whale	4.85±0.07	4.79±0.07	4.95±0.08	4.89±0.07
Leopard v. Raccoon	26.43±0.17	26.24±0.16	26.93±0.20	26.74±0.19
Leopard v. Rat	17.62±0.20	17.75±0.21	18.78±0.25	18.00±0.23
Leopard v. Seal	13.26±0.10	13.05±0.10	13.33±0.10	13.35±0.10
Cat v. Pig	24.35±0.24	23.95±0.22	24.52±0.24	24.53±0.25
Cat v. Hippo.	15.02±0.10	14.85±0.10	15.52±0.12	15.26±0.11
Cat v. Whale	7.66±0.09	7.63±0.09	7.51±0.09	7.41±0.10
Cat v. Raccoon	15.54±0.11	15.35±0.10	15.80±0.10	15.71±0.13
Cat v. Rat	34.96±0.30	34.30±0.30	34.83±0.32	34.07±0.32
Cat v. Seal	18.79±0.14	18.58±0.13	18.97±0.14	18.85±0.13
Pig v. Hippo.	27.57±0.27	27.27±0.27	27.75±0.25	27.72±0.27
Pig v. Whale	8.37±0.15	8.22±0.16	8.51±0.17	8.24±0.16
Pig v. Raccoon	24.45±0.24	24.23±0.23	24.40±0.25	24.34±0.25
Pig v. Rat	30.00±0.26	29.62±0.26	30.77±0.30	30.22±0.28
Pig v. Seal	23.91±0.24	23.37±0.21	24.35±0.23	23.79±0.22
Hippo. v. Whale	14.03±0.12	13.80±0.12	14.01±0.12	14.01±0.10
Hippo. v. Raccoon	19.31±0.14	19.14±0.13	19.61±0.15	19.52±0.13
Hippo. v. Rat	21.49±0.27	21.82±0.26	22.67±0.26	22.44±0.27
Hippo. v. Seal	30.68±0.17	30.60±0.18	31.52±0.18	31.03±0.19
Whale v. Raccoon	7.92±0.09	7.77±0.08	7.61±0.09	7.68±0.09
Whale v. Rat	10.98±0.22	11.14±0.22	11.38±0.24	11.17±0.24
Whale v. Seal	18.57±0.16	18.18±0.16	18.58±0.18	18.37±0.16
Raccoon v. Rat	25.16±0.27	25.22±0.25	25.90±0.24	25.73±0.25
Raccoon v. Seal	15.06±0.13	14.82±0.13	15.43±0.12	15.35±0.12
Rat v. Seal	24.91±0.28	24.63±0.27	25.24±0.28	25.16±0.28
<i>average ranking</i>	2.09	1.40	3.71	2.80
<i>average error</i>	17.60±0.10	17.47±0.10	18.21±0.11	17.80±0.10

Table 2: Error rate performance on the AwA dataset over 100 repeated experiments. **SURF** image features as the **original** domain and **attributes** as the **privileged** domain. The best methods for each binary task is highlighted in boldface.

	GPC	GPC+ (Ours)	SVM	SVM+
Chimp. v. Panda	15.93±0.15	15.85±0.14	16.90±0.15	16.64±0.15
Chimp. v. Leopard	14.74±0.13	14.72±0.12	15.28±0.15	15.18±0.12
Chimp. v. Cat	16.63±0.12	16.51±0.11	17.34±0.11	17.08±0.10
Chimp. v. Pig	19.82±0.23	19.50±0.26	20.52±0.27	20.34±0.24
Chimp. v. Hippo.	18.99±0.11	18.68±0.11	19.57±0.11	19.36±0.11
Chimp. v. Whale	5.72±0.08	5.79±0.08	6.22±0.11	5.63±0.08
Chimp. v. Raccoon	19.60±0.13	19.66±0.13	20.03±0.14	20.13±0.13
Chimp. v. Rat	19.94±0.27	19.82±0.26	21.53±0.30	20.22±0.28
Chimp. v. Seal	14.10±0.12	14.03±0.12	14.94±0.12	14.57±0.15
Panda v. Leopard	14.19±0.12	14.21±0.13	14.85±0.15	14.82±0.14
Panda v. Cat	12.96±0.12	12.98±0.12	14.26±0.13	13.96±0.12
Panda v. Pig	20.23±0.23	20.18±0.22	22.54±0.29	21.41±0.26
Panda v. Hippo.	15.47±0.12	15.44±0.13	16.89±0.17	16.16±0.17
Panda v. Whale	5.00±0.09	5.20±0.09	5.73±0.11	5.06±0.08
Panda v. Raccoon	17.03±0.13	17.02±0.13	18.37±0.18	18.06±0.15
Panda v. Rat	17.09±0.24	17.26±0.23	20.06±0.30	18.37±0.25
Panda v. Seal	14.13±0.13	13.99±0.13	15.16±0.17	14.82±0.15
Leopard v. Cat	12.08±0.11	11.81±0.09	11.79±0.08	12.13±0.11
Leopard v. Pig	20.97±0.24	21.11±0.24	21.88±0.24	22.03±0.29
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Leopard v. Raccoon	26.43±0.17	26.27±0.17	26.93±0.20	27.31±0.19
Leopard v. Rat	17.62±0.20	17.67±0.21	18.78±0.25	18.84±0.24
Leopard v. Seal	13.26±0.10	13.04±0.10	13.33±0.10	13.38±0.10
Cat v. Pig	24.35±0.24	24.01±0.23	24.52±0.24	24.68±0.25
Cat v. Hippo.	15.02±0.10	14.87±0.10	15.52±0.12	15.47±0.11
Cat v. Whale	7.66±0.09	7.63±0.09	7.51±0.09	7.48±0.09
Cat v. Raccoon	15.54±0.11	15.32±0.10	15.80±0.10	15.78±0.10
Cat v. Rat	34.96±0.30	34.42±0.29	34.83±0.32	34.79±0.28
Cat v. Seal	18.79±0.14	18.60±0.13	18.97±0.14	19.25±0.16
Pig v. Hippo.	27.57±0.27	27.36±0.26	27.75±0.25	28.17±0.26
Pig v. Whale	8.37±0.15	8.24±0.16	8.51±0.17	8.38±0.15
Pig v. Raccoon	24.45±0.24	24.24±0.22	24.40±0.25	24.91±0.22
Pig v. Rat	30.00±0.26	29.67±0.26	30.77±0.30	30.33±0.29
Pig v. Seal	23.91±0.24	23.41±0.22	24.35±0.23	24.03±0.23
Hippo. v. Whale	14.03±0.12	13.82±0.12	14.01±0.12	14.45±0.13
Hippo. v. Raccoon	19.31±0.14	19.15±0.13	19.61±0.15	19.74±0.16
Hippo. v. Rat	21.49±0.27	21.79±0.26	22.67±0.26	22.33±0.26
Hippo. v. Seal	30.68±0.17	30.61±0.18	31.52±0.18	31.47±0.19
Whale v. Raccoon	7.92±0.09	7.79±0.08	7.61±0.09	7.66±0.08
Whale v. Rat	10.98±0.22	11.16±0.22	11.38±0.24	11.17±0.22
Whale v. Seal	18.57±0.16	18.28±0.16	18.58±0.18	18.99±0.18
Raccoon v. Rat	25.16±0.27	25.21±0.25	25.90±0.24	26.12±0.26
Raccoon v. Seal	15.06±0.13	14.85±0.12	15.43±0.12	15.42±0.13
Rat v. Seal	24.91±0.28	24.64±0.26	25.24±0.28	25.14±0.27
<i>average ranking</i>	1.98	1.40	3.44	3.18
<i>average error</i>	17.60±0.10	17.48±0.10	18.21±0.11	18.06±0.11