

RepDwNet: Lightweight Deep Learning Model for Special biological blood Raman spectra analysis

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Table S1. Reflective Raman spectroscopy dataset category and sample details

Index	Species	Blood
1	Black Bear	98
2	Bohai Bull	147
3	British Short	30
4	Buffalo	30
5	Cattle	30
6	Chicken	196
7	Duck	150
8	Eurasian Lynx	30
9	Golden Monkey	30
10	Goose	150
11	Horse	138
12	Kangaroo	30
13	Mongolian Cattle	150
14	Nanyang Cattle	147
15	Panda	30
16	Pastoral Dog	30
17	Pianniu	150
18	Pig	34
19	Pigeon	115
20	Qinghai Yellow Cattle	147
21	Red Crowned Crane	30
22	Shiba Inu	30
23	Sika Deer	30
24	Tengchong Horse	144
25	Tibetan Cattle	150
26	Tibetan Donkey	150
27	Tibetan Horse	150
28	Yunnan Donkey	150

Table S2. Transmission Raman spectroscopy dataset category and sample details

Index	Species	Blood
1	Black_Bear	100
2	Blue_Yellow_Parrot	12
3	Bohai_Cattle	168
4	Chicken	205
5	Demoiselle_Crane	10
6	Duck	150
7	Dzo	160
8	Gallus	10
9	Gibbon	10
10	Golden_Monkey	10
11	Golden_Pheasant	12
12	Goose	149
13	Horse	136
14	Leopard	10
15	Mongolian_Cattle	166
16	Nanyang_Cattle	160
17	Pheasant	11
18	Pig	34
19	Pigeon	124
20	Qinghai_Yellow_Cattle	160
21	Syrmaticus_Reevesii	12
22	Tengchong_Horse	160
23	Tibetan_Cattle	160
24	Tibetan_Donkey	160
25	Tibetan_Horse	161
26	White_Naped_Crane	10
27	White_Stork	10
28	Yunnan_Donkey	150

Table S3. Classification report of Raman RepDwNet for reflective Raman spectral of blood species identification

Class	Precision	Recall	F1-score	Support
Black Bear	1.0000	1.0000	1.0000	20
Bohai Bull	1.0000	1.0000	1.0000	2
British Short	0.9429	1.0000	0.9706	33
Buffalo	0.9535	1.0000	0.9762	41
Cattle	1.0000	1.0000	1.0000	2
Chicken	1.0000	0.9333	0.9655	30
Duck	0.9697	1.0000	0.9846	32
Eurasian Lynx	0.6667	1.0000	0.8000	2
Golden Monkey	1.0000	1.0000	1.0000	2
Goose	1.0000	1.0000	1.0000	2
Horse	1.0000	1.0000	1.0000	2
Kangaroo	0.9667	1.0000	1.0000	29
Mongolian Cattle	1.0000	1.0000	1.0000	27
Nanyang Cattle	1.0000	1.0000	1.0000	2
Panda	1.0000	0.9697	0.9846	33
Pastoral Dog	1.0000	0.9688	0.9841	32
Pianniu	1.0000	1.0000	1.0000	2

Pig	1.0000	1.0000	1.0000	6
Pigeon	1.0000	0.9583	0.9787	24
Qinghai Yellow Cattle	1.0000	1.0000	1.0000	32
Red Crowned Crane	1.0000	0.5000	0.6667	2
Shiba Inu	1.0000	1.0000	1.0000	32
Sika Deer	1.0000	1.0000	1.0000	32
Tengchong Horse	1.0000	1.0000	1.0000	32
Tibetan Cattle	1.0000	0.9688	0.9841	32
Tibetan Donkey	1.0000	1.0000	1.0000	2
Tibetan Horse	1.0000	1.0000	1.0000	2
Yunnan Donkey	1.0000	1.0000	1.0000	30
accuray				519
macro avg	0.9821	0.9750	0.9742	519
weighted avg	0.9877	0.9865	0.9864	519

Table S4. Classification report of Raman RepDwNet for transmission Raman spectral of blood species identification

Class	Precision	Recall	F1-score	Support
Black_Bear	1.0000	1.0000	1.0000	19
Blue_Yellow_Parrot	1.0000	1.0000	1.0000	29
Bohai_Cattle	0.8571	1.0000	0.9231	6
Chicken	1.0000	1.0000	1.0000	6
Demoiselle_Crane	1.0000	1.0000	1.0000	6
Duck	0.9730	0.9231	0.9474	39
Dzo	0.9667	0.9667	0.9667	30
Gallus	1.0000	1.0000	1.0000	6
Gibbon	1.0000	1.0000	1.0000	6
Golden_Monkey	0.8286	0.9667	0.8923	30
Golden_Pheasant	1.0000	0.9259	0.9615	27
Goose	0.9667	1.0000	1.0000	6
Horse	1.0000	1.0000	1.0000	30
Leopard	1.0000	1.0000	1.0000	29
Mongolian_Cattle	1.0000	1.0000	1.0000	6
Nanyang_Cattle	1.0000	0.8333	0.9091	6
Pheasant	1.0000	1.0000	1.0000	30
Pig	1.0000	1.0000	1.0000	6
Pigeon	0.9524	0.8696	0.9091	23
Qinghai_Yellow_Cattle	1.0000	1.0000	1.0000	29
Syrmaticus_Reevesii	1.0000	1.0000	0.6667	6
Tengchong_Horse	1.0000	1.0000	1.0000	6
Tibetan_Cattle	1.0000	1.0000	1.0000	6
Tibetan_Donkey	1.0000	1.0000	1.0000	28
Tibetan_Horse	1.0000	1.0000	1.0000	30
White_Naped_Crane	0.9677	1.0000	0.9836	30
White_Stork	1.0000	1.0000	1.0000	30
Yunnan_Donkey	1.0000	1.0000	1.0000	30
accuray				535
macro avg	0.9838	0.9816	0.9819	535
weighted avg	0.9811	0.9794	0.9796	535