1 MiSiCNet

1.1 Apex

Table 1: MiSiCNet Performance on Apex Dataset (5 runs): Per-Endmember Metrics (Mean ± Std)

Endmember	**Metric**	**Mean**	**Std. Dev.**
1	SNR Before (dB)	2.400	0.000
	SNR After (dB)	-3.387	0.0015
	ΔSNR (dB)	-5.787	0.0015
2	SNR Before (dB)	3.327	0.000
	SNR After (dB)	2.681	0.0016
	ΔSNR (dB)	-0.646	0.0016
3	SNR Before (dB)	2.276	0.000
	SNR After (dB)	0.718	0.0057
	ΔSNR (dB)	-1.558	0.0057
4	SNR Before (dB)	0.253	0.000
	SNR After (dB)	-2.125	0.0022
	ΔSNR (dB)	-2.378	0.0022
All	Spatial Entropy (bits)	[8.9774, 8.9690, 9.0319, 8.9520]	[0.00015, 0.00015, 0.00045, 0.00025]
	Mean Per-Pixel Entropy (bits)	0.8755	0.0002
System	Training Time (s)	38.94	0.81
	GPU Peak Memory (MB)	379.42	≈0.00
	CPU RSS Memory (MB)	2116.3	45.0

Table 2: Endmember SAD Results for MiSiCNet on Apex (5 runs)

Endmember	**Metric**	**Mean**
1	SAD	0.1201
2	SAD	0.1620
3	SAD	0.1156
4	SAD	0.5184
Mean (All)	SAD (avg)	0.2290

Table 3: Abundance RMSE Results for MiSiCNet on Apex (5 runs)

Endmember	**Metric**	**Mean**
1	RMSE	0.2038
2	RMSE	0.1554
3	RMSE	0.1727
4	RMSE	0.2054
Mean (All)	RMSE (avg)	0.1843

Table 4: Reconstruction Error for MiSiCNet on Apex (5 runs)

Run	**Metric**	**Mean**
All Runs (1–5)	RMSE (Reconstruction)	0.0374

1.2 Samson

Table 5: MiSiCNet Performance on Samson Dataset (5 runs): Per-Endmember Metrics (Mean ± Std)

Endmember	**Metric**	**Mean**	**Std. Dev.**
1	SNR Before (dB)	5.450	0.000
	SNR After (dB)	-3.078	0.007
	ΔSNR (dB)	-8.524	0.007
2	SNR Before (dB)	3.570	0.000
	SNR After (dB)	1.140	0.005
	ΔSNR (dB)	-2.430	0.005
3	SNR Before (dB)	0.703	0.000
	SNR After (dB)	10.363	0.002
	ΔSNR (dB)	9.659	0.003
All	Spatial Entropy (bits)	[8.668, 8.515, 8.586]	[0.0003, 0.0005, 0.0003]
	Mean Per-Pixel Entropy (bits)	0.5725	0.0002
System	Training Time (s)	25.5	2.4
	GPU Peak Memory (MB)	286.85	≈0.00
	CPU RSS Memory (MB)	2049.4	9.0

Table 6: Endmember SAD for MiSiCNet on Samson (5 runs)

Endmember	**Mean SAD**
1	0.0199
2	0.0285
3	0.1702
4 (mSAD)	0.0728

Table 7: Abundance RMSE for MiSiCNet on Samson (5 runs)

Endmember	**Mean RMSE**
1	0.1612
2	0.1931
3	0.2885
4 (mRMSE)	0.2142

Table 8: Reconstruction RMSE for MiSiCNet on Samson (5 runs)

Metric	Mean
Reconstruction RMSE	0.0238

2 TransNet

2.1 Apex

Table 9: TransNet Diagnostic Summary (Samson, 4 Endmembers, 5 Runs)

Metric	Endmember 1	Endmember 2	Endmember 3	Endmember 4
SNR Before (dB)	2.400 ± 0.000	3.327 ± 0.000	2.276 ± 0.000	0.253 ± 0.000
SNR After (dB)	-0.655 ± 0.262	-6.575 ± 0.228	4.240 ± 0.037	-1.522 ± 0.327
SNR Improvement (dB)	-3.055 ± 0.263	-9.901 ± 0.233	1.963 ± 0.038	-1.775 ± 0.317
Spatial Entropy	8.574 ± 0.013	8.790 ± 0.028	8.921 ± 0.005	8.695 ± 0.016
Mean Pixel Entropy	0.679 ± 0.009			
Training Time (s)	51.78 ± 9.8			
GPU Peak (MB)	337.33 ± 0.50			
CPU RSS (MB)	2257.9 ± 18.1			

Table 10: Endmember SAD on Apex (mean ± std)

Endmember	Mean	Std
1	0.113185	0.017126
2	0.134952	0.001257
3	0.124548	0.008414
4	0.056274	0.001249

Table 11: Abundance RMSE on Apex (mean ± std)

Endmember	Mean	Std
1	0.181408	0.002189
2	0.103912	0.004041
3	0.143182	0.007672
4	0.140273	0.009881

Table 12: Reconstruction RMSE on Apex (mean ± std)

Metric	Mean ± Std
Run 1	0.052442 ± 0.002528

2.2 Samson

Endmember	**Metric**	**Mean**	**Std**
EM 1	SNR before (dB)	5.450	0.000
	SNR after (dB)	-5.565	0.671
	ΔSNR (after-before)	-11.015	0.671
	Spatial entropy	8.362	0.031
EM 2	SNR before (dB)	3.570	0.000
	SNR after (dB)	5.828	0.644
	ΔSNR (after-before)	2.258	0.644
	Spatial entropy	8.508	0.089
EM 3	SNR before (dB)	0.703	0.000
	SNR after (dB)	-2.635	1.108
	ΔSNR (after-before)	-3.338	1.108
	Spatial entropy	8.455	0.074
Global	Mean per-pixel entropy	0.432	0.055
	Training time (s)	29.30	1.02
	GPU peak (MB)	172.60	25.70
	CPU RSS (MB)	1847.10	1.77

Table 13: TransNet (Samson) per-endmember and global diagnostics summary over 5 runs.

Table 14: Endmember SAD on Samson (mean ± std)

Endmember	**Mean**	**Std**
1	0.043815	0.064684
2	0.043040	0.011006
3	0.032075	0.008353

Table 15: Abundance RMSE on Samson (mean ± std)

Endmember	**Mean**	**Std**
1	0.187581	0.088351
2	0.082808	0.031273
3	0.185997	0.074104

Table 16: Reconstruction RMSE on Samson (mean ± std)

Metric	Mean ± Std
Run 1	0.122511 ± 0.019657

3 NFINDR

3.1 Samson

Table 17: NFINDR on Samson (5 runs). Per-endmember and system metrics: Mean ± Std.

Endmember	**Metric**	**Mean**	**Std.**
1	SNR Before (dB)	5.450	0.000
	SNR After (dB)	-2.788	1.319
	ΔSNR (dB)	-8.238	1.319
	Spatial Entropy (bits)	8.751	0.197
2	SNR Before (dB)	3.570	0.000
	SNR After (dB)	-1.012	0.527
	ΔSNR (dB)	-4.582	0.527
	Spatial Entropy (bits)	8.695	0.364
3	SNR Before (dB)	0.703	0.000
	SNR After (dB)	-0.896	8.086
	ΔSNR (dB)	-1.599	8.086
	Spatial Entropy (bits)	8.386	0.167
Image / System	Mean per-pixel entropy (bits)	0.6096	0.0000
	Fit time (s)	11.676	1.900
	FCLS time (s)	22.122	1.786
	Total time (s)	107.764	48.680
	GPU peak (MB)	0.000	0.000
	CPU RSS (MB)	914.471	13.549

Table 18: NFINDR on Samson: Endmember-wise RMSE and SAD over 5 runs (Mean ± Std).

Metric	Endmember	Mean	Std.
RMSE	1	0.4613	0.0504
	2	0.4417	0.0945
	3	0.4071	0.0419
SAD	1	0.0769	0.0440
	2	0.0949	0.0425
	3	0.0409	0.0001

3.2 Apex

Table 19: NFINDR Performance (5 runs): Per-Endmember SNR, Spatial Entropy and Timing

Endmember	SNR before (dB)	SNR after (dB)	ΔSNR (dB)	Spatial Entropy
1	2.400 ± 0.000	-7.368 ± 2.598	-9.768 ± 2.598	8.457 ± 0.158
2	3.327 ± 0.000	-6.453 ± 2.869	-9.780 ± 2.869	8.683 ± 0.512
3	2.276 ± 0.000	0.805 ± 4.315	-1.471 ± 4.315	8.942 ± 0.229
4	0.253 ± 0.000	0.753 ± 4.876	0.500 ± 4.876	9.017 ± 0.272
Mean pixel entropy	0.7025 ± 0.0000			
Times (s)	Fit: 18.62 ± 1.08, FCLS: 43.53 ± 0.40, Total: 190.73 ± 90.71			
CPU RSS (MB)	1035.59 ± 11.58			

Table 20: NFINDR: RMSE per endmember across 5 runs (mean ± std)

Endmember	0	1	2	3
RMSE mean	0.22048	0.40825	0.42863	0.49746
RMSE std	0.00694	0.07808	0.07009	0.02014

Table 21: NFINDR: SAD per endmember across 5 runs (mean ± std) [radians]

Endmember	0	1	2	3
SAD mean	0.14826	0.19757	0.12672	0.13219
SAD std	0.06353	0.03489	0.01850	0.02169