

Latent Fusion for RF Anomaly Detection

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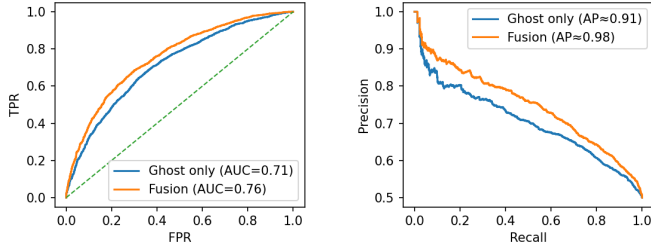


Fig. 1. ROC (left) and PR (right): fusion vs ghost-only at 10.000 dB.

Config	SNR (dB)	AUC-PR	F1	ECE
Fusion	20.000	1.00	0.99	0.08
Fusion	15.000	1.00	0.98	0.13
Fusion	10.000	0.98	0.92	0.17
Fusion	5.000	0.91	0.84	0.21

TABLE I
 TOP FUSION CONFIGURATIONS ACROSS SNR.

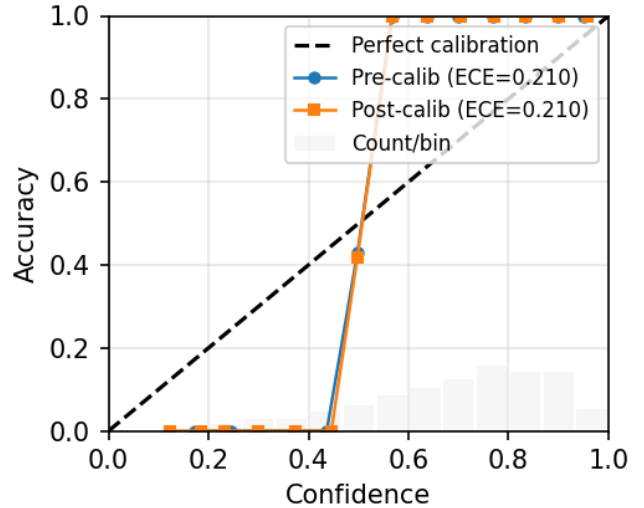


Fig. 2. Reliability diagram with identity line.

Abstract—We present a single latent aggregator that denoises spectra, reconstructs via ghost imaging, and fuses auxiliary cues (SBI, MWFL). Across SNR regimes it outperforms single-cue baselines and improves calibration.

I. METHOD

FFT→RestorMixer denoise (token-mixing residual mixer for 1-D spectra)→ghost reconstruction; optional SBI (Scythe burst-interval heuristic) and MWFL (multi-wavelength laser veto) checks; anomaly logits are calibrated with temperature scaling.

II. RESULTS

Summary. Section II reports best fusion across SNR; Section II shows ablations; Figures 1 and 2 show ROC/PR and reliability.

III. CONCLUSION

A single latent fusion stack yields robust gains and better calibration vs single-cue baselines in noisy regimes.

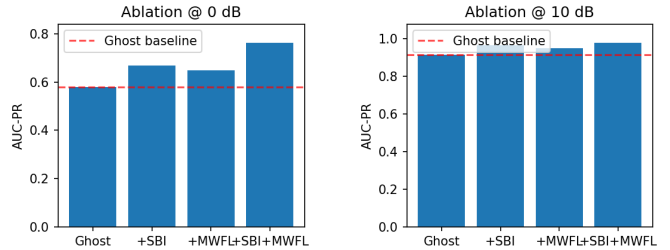


Fig. 3. Fusion ablations at 0.000 dB and 10.000 dB.

SNR (dB)	Variant	AUC-PR	F1	ECE
0.000	Ghost	0.58	0.67	0.26
0.000	+SBI	0.67	0.69	0.30
0.000	+MWFL	0.65	0.68	0.31
0.000	+SBI+MWFL	0.76	0.73	0.27
10.000	Ghost	0.91	0.84	0.21
10.000	+SBI	0.96	0.90	0.18
10.000	+MWFL	0.95	0.88	0.19
10.000	+SBI+MWFL	0.98	0.92	0.17

TABLE II
 ABLATIONS: GHOST VS +SBI, +MWFL AT TWO SNRS.

Temperature	ECE (pre)	ECE (post)
0.80	0.21	0.21

TABLE III

CALIBRATION: TEMPERATURE AND ECE (PRE/POST).