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Supplementary Material: Towards Reliable Classification

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Supplementary Implementation Details

Table 1. Implementation settings.

Setting	Value
Training	Batch 16, balanced classes, 100 epochs, three seeds
Augmentation	One intensity transform (blur, noise, brightness/contrast, or gamma), grid distortion, CLAHE, shift-scale-rotate, flips, transpose
Normalization	Nonzero-pixel min-max scaling to $[0, 1]$; zero background preserved
Pair selection	Weakest 25% positives; hardest 25% negatives
Boundary settings	Memory bank 2048, post-update; two-epoch warm-up; minimum 128 positives; stopped gradient
Loss settings	Pairwise margin .05; SA-FP temperature 1.0, $\lambda_{\text{pair}} = .30$, $\lambda_{\text{FP}} \in \{0, .05, .10, .20\}$
Baselines	Focal $\gamma = 2$; FPR-pAUC maximum FPR=.20
Calibration	ECE with 10 equal-width bins; no prior correction or post-hoc calibration