Noise-Resistant Training Methods

Rank Stability (RS)

Weight pairs by noise reliability
$w_{ij} = \text{sigmoid}(-k(\sigma i^2 + \sigma j^2))$

Distributional (DH)

Predict μ and σ^2 jointly
$L = \text{MSE}(\mu, y) + \lambda \cdot \text{MSE}(\sigma^2, \text{noise})$

Noise Gated (NG)

Combine heteroscedastic +
rank stability losses

Contrastive (CA)

Noise-based similarity
for contrastive learning

Quantile Sampling (QS)

Stratified sampling across
activity + noise quantiles

Hard Negative (HN)

Mine informative pairs:
small Δactivity + low noise