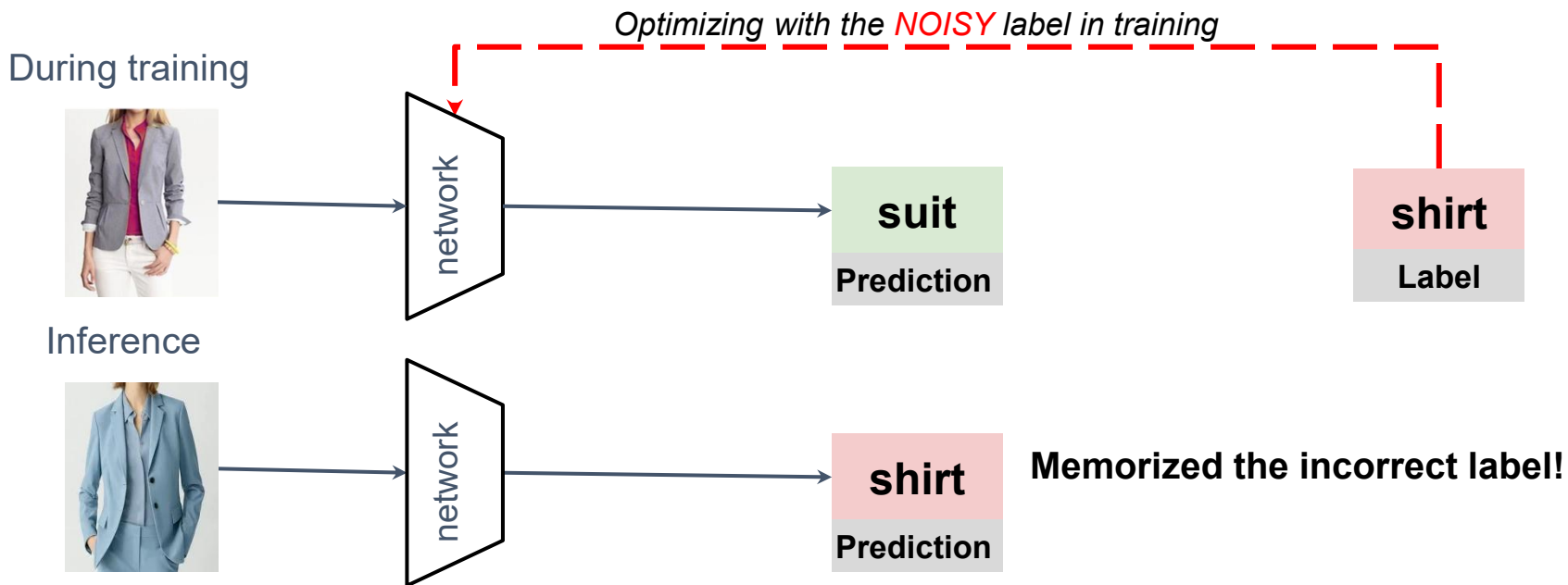


Noise-Aware Generalization: Robustness to In-Domain Noise and Out-of-Domain Generalization

Siqi Wang, Aoming Liu, Bryan A. Plummer




Learning with Noisy Labels (LNL): avoid overfitting to the noise



Detecting label noise under domain shifts


Prediction: 0.99 Dog



Label: Dog

Loss: 0.01


Prediction: 0.51 Dog



Label: Dog

Loss: 0.67

Prediction: 0.52 Dog




Label: Dog

Loss: 0.65

Detecting label noise under domain shifts


Prediction: 0.99 Dog



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Distribution Shift
should be **Included**
from training for
generalization.

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Noisy Label should be **excluded** from training to avoid overfitting.

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Label: Dog

Loss: 0.65



Distribution Shift should be **Included** from training for generalization.



Noisy Label should be **excluded** from training to avoid overfitting.

Similarity Score: 0.35

Similarity Score: 0.37

Single-domain comparisons



Photo-Lion



Photo-Lion

Noisy?

*Comparing within
the **same domain** is
challenging.*

Single-domain comparisons



Photo-Lion

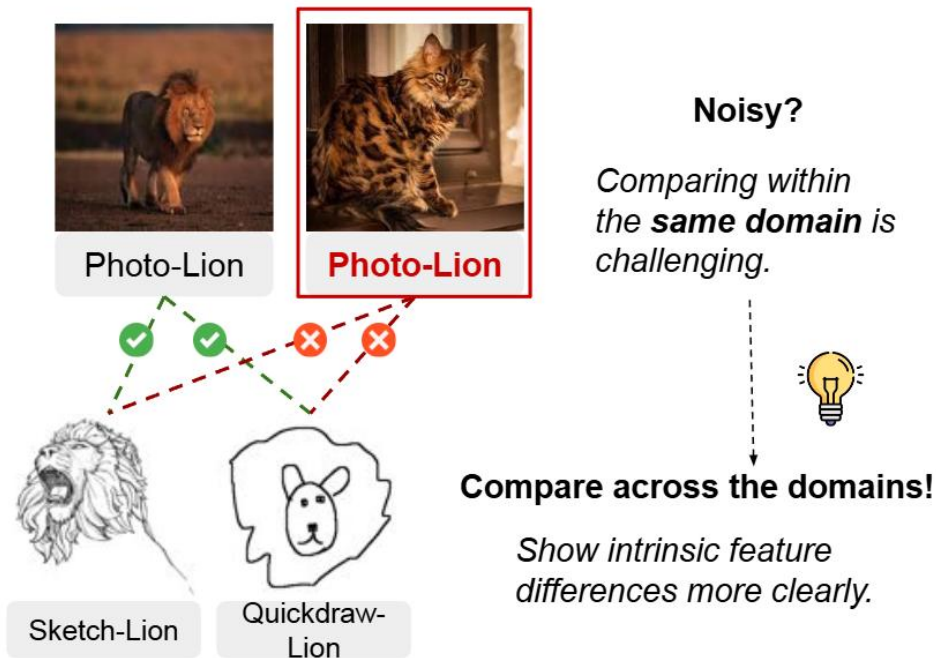


Photo-Lion

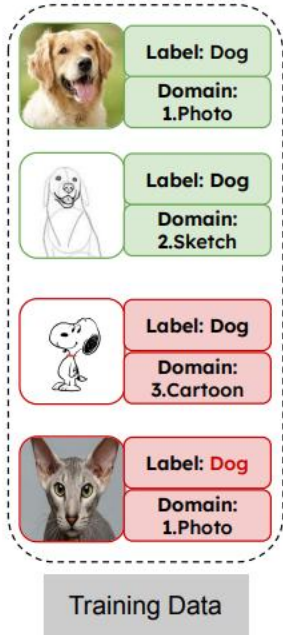
Noisy?

*Comparing within
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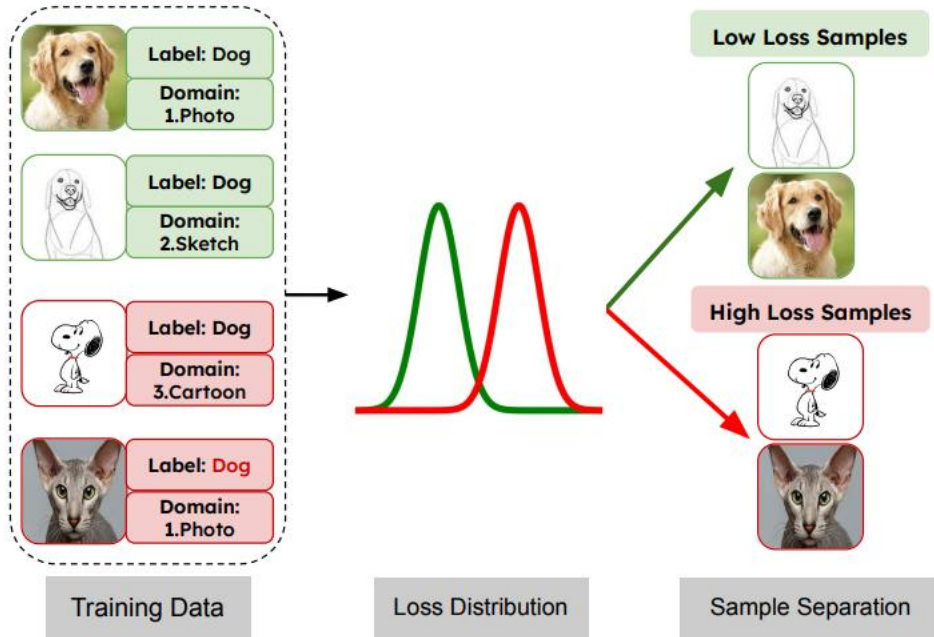
Cross-domain comparisons are more robust!



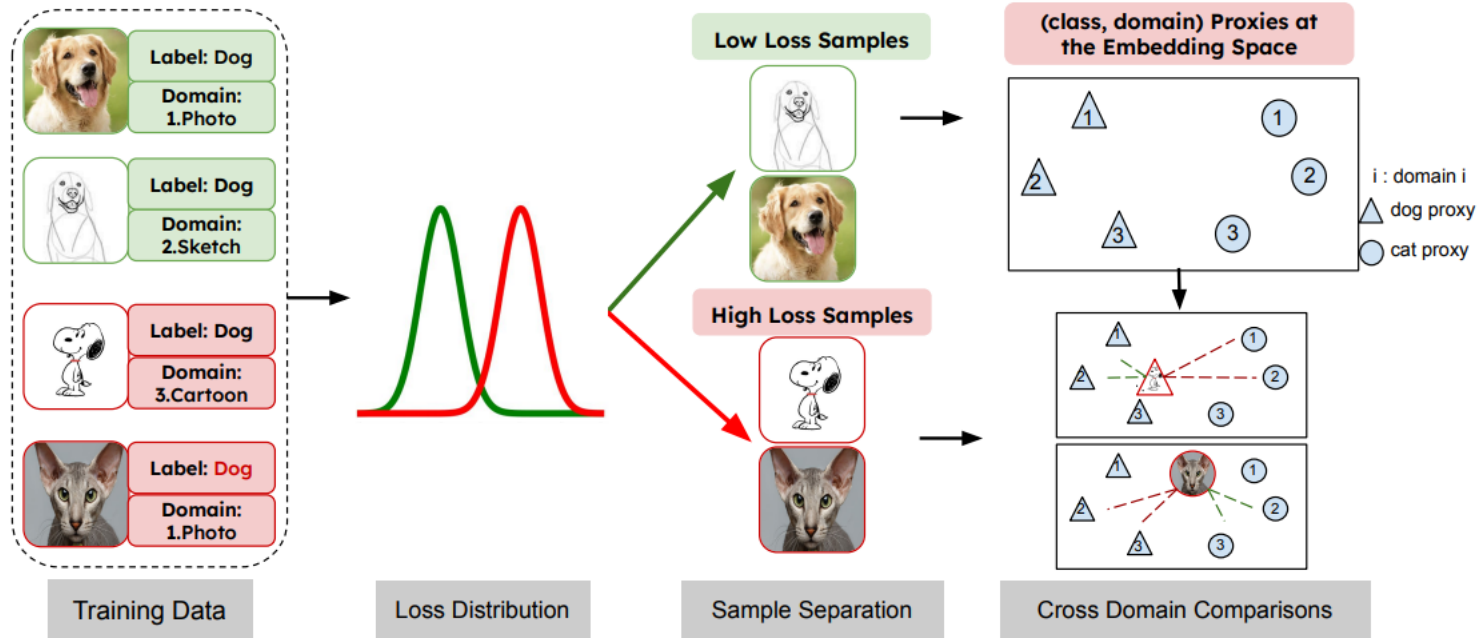
Domain Labels for Noise Detection (DL4ND) Framework



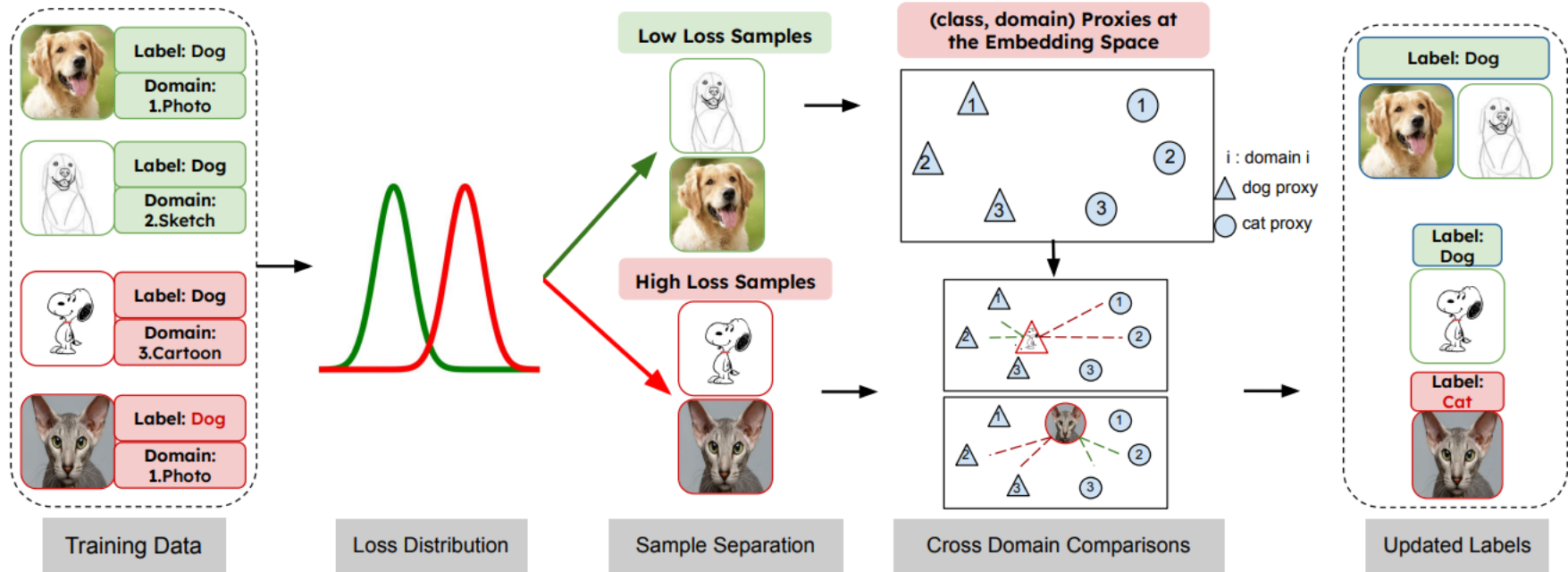
Domain Labels for Noise Detection (DL4ND) Framework



Domain Labels for Noise Detection (DL4ND) Framework



Domain Labels for Noise Detection (DL4ND) Framework



Classification Accuracy on VLCS

	ID	OOD	AVG
ERM	88.5	84.6	86.6
ERM++ (WACV 2025)	90.9	86.6	88.7
PLM (CVPR 2024)	87.9	82.6	85.2
Our Best	95.4	89.0	92.2



Thank you!

Paper:

