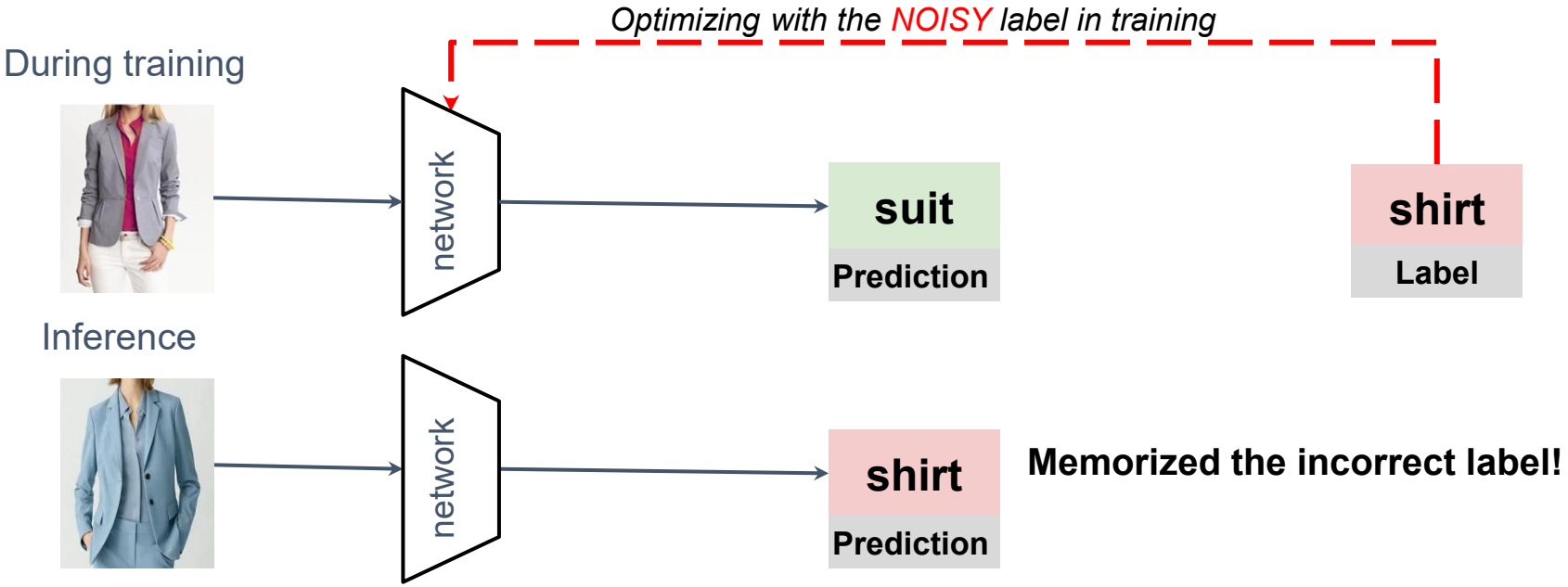
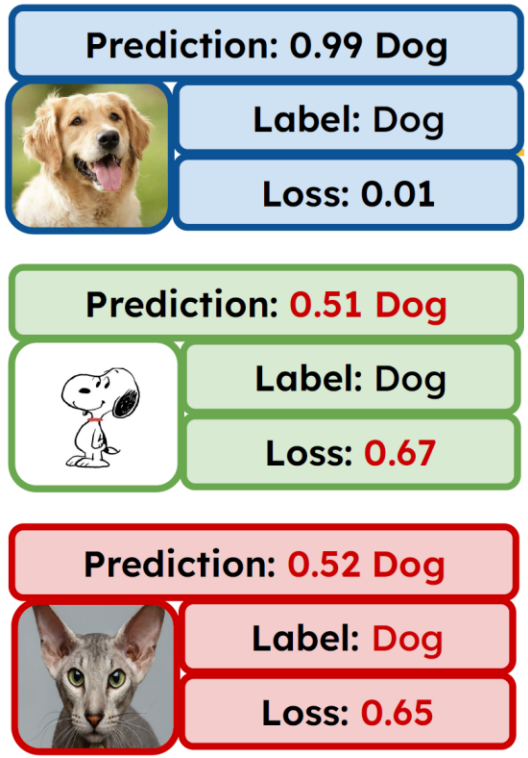
Noise-Aware Generalization: Robustness to In-Domain Noise and Out-of-Domain Generalization

Siqi Wang, Aoming Liu, Bryan A. Plummer

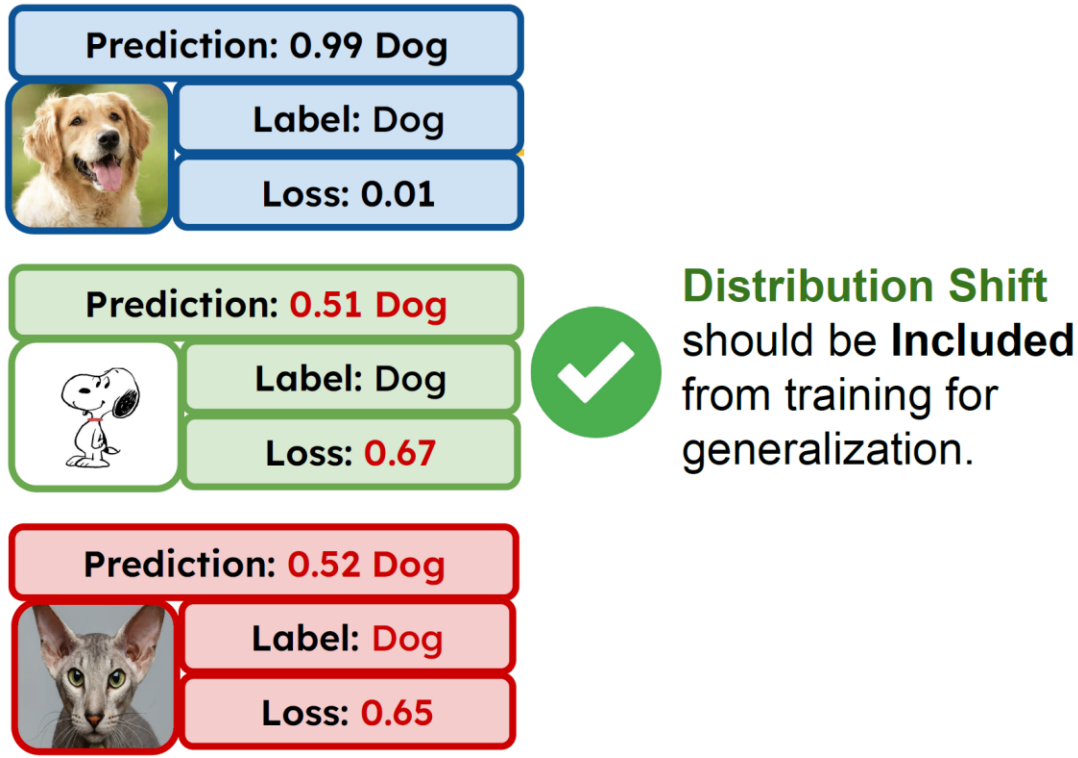
Learning with Noisy Labels (LNL): avoid overfitting to the noise



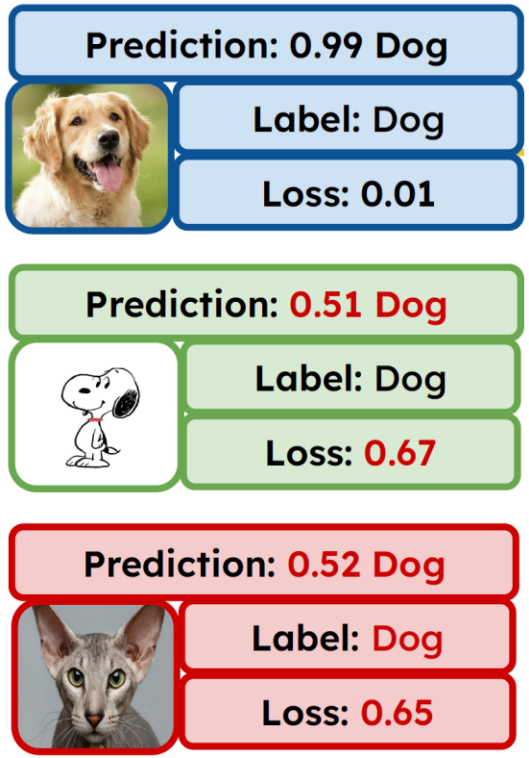
Detecting label noise under domain shifts



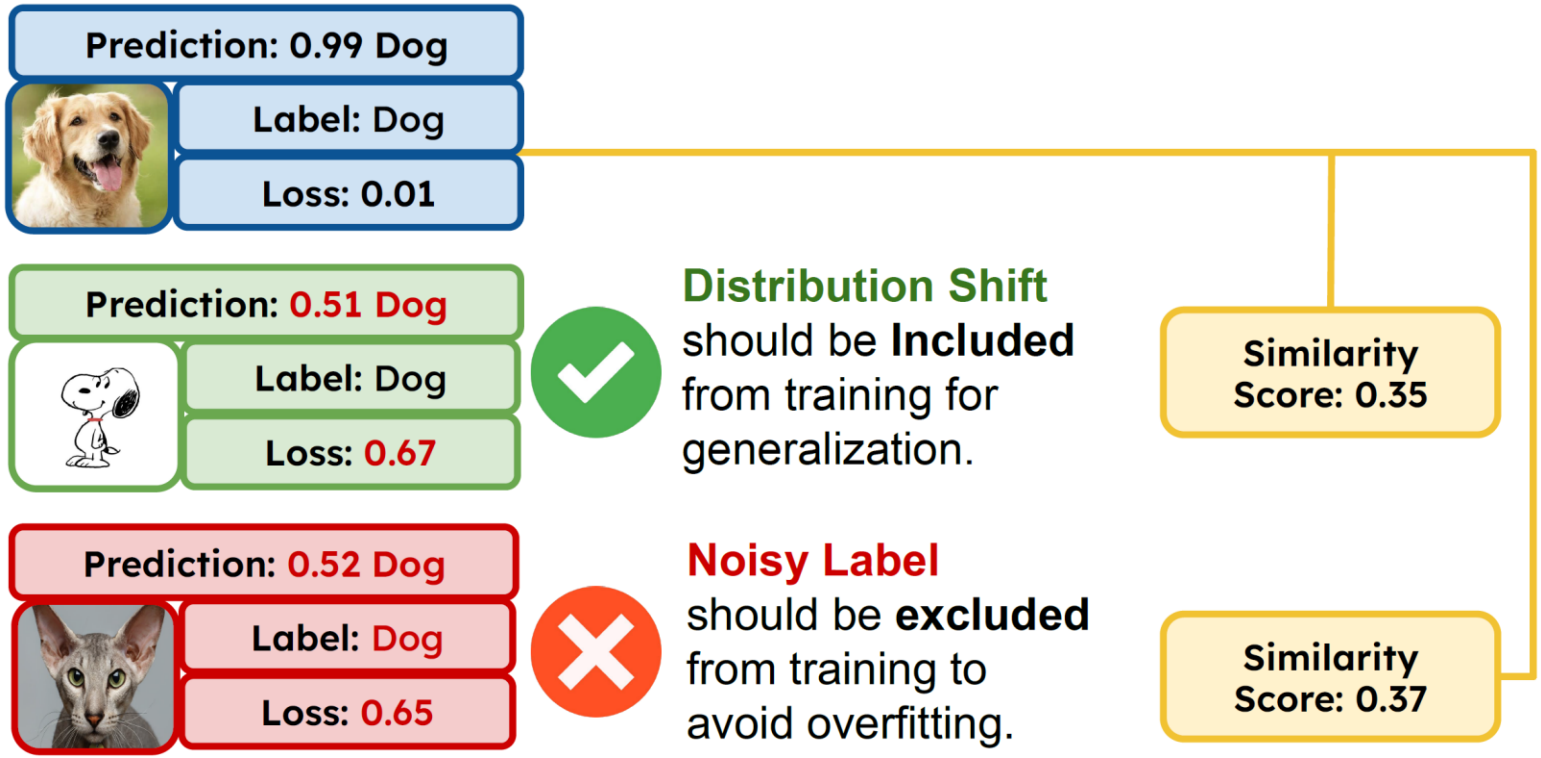
Detecting label noise under domain shifts



Detecting label noise under domain shifts



Detecting label noise under domain shifts



Single-domain comparisons

Photo-Lion

Photo-Lion

Noisy?

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

Single-domain comparisons

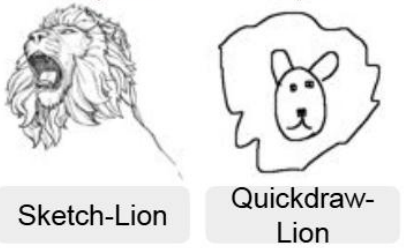
Photo-Lion

Photo-Lion

Noisy?

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

Cross-domain comparisons are more robust!



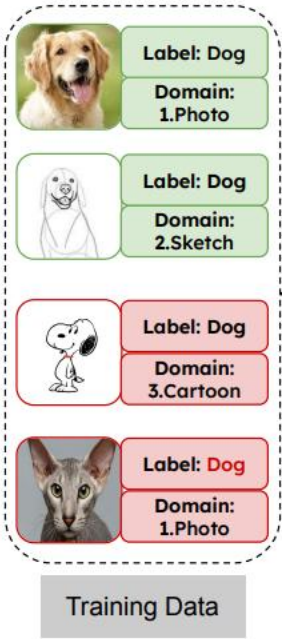
Noisy?

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

Compare across the domains!

Show intrinsic feature differences more clearly.

Domain Labels for Noise Detection (DL4ND) Framework



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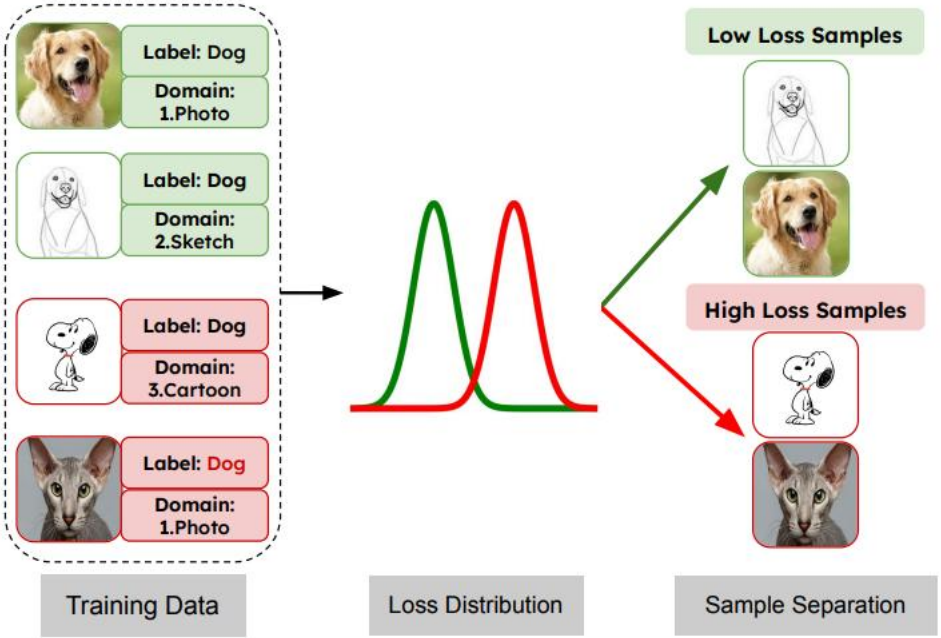

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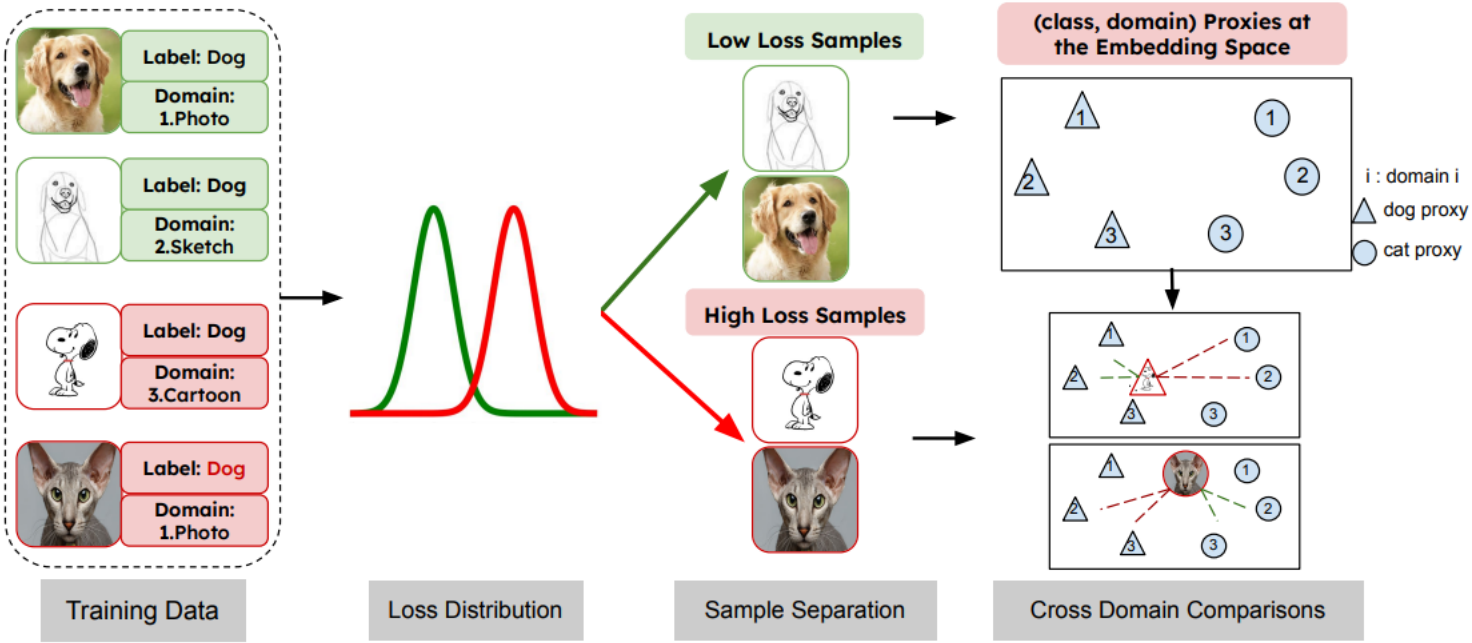

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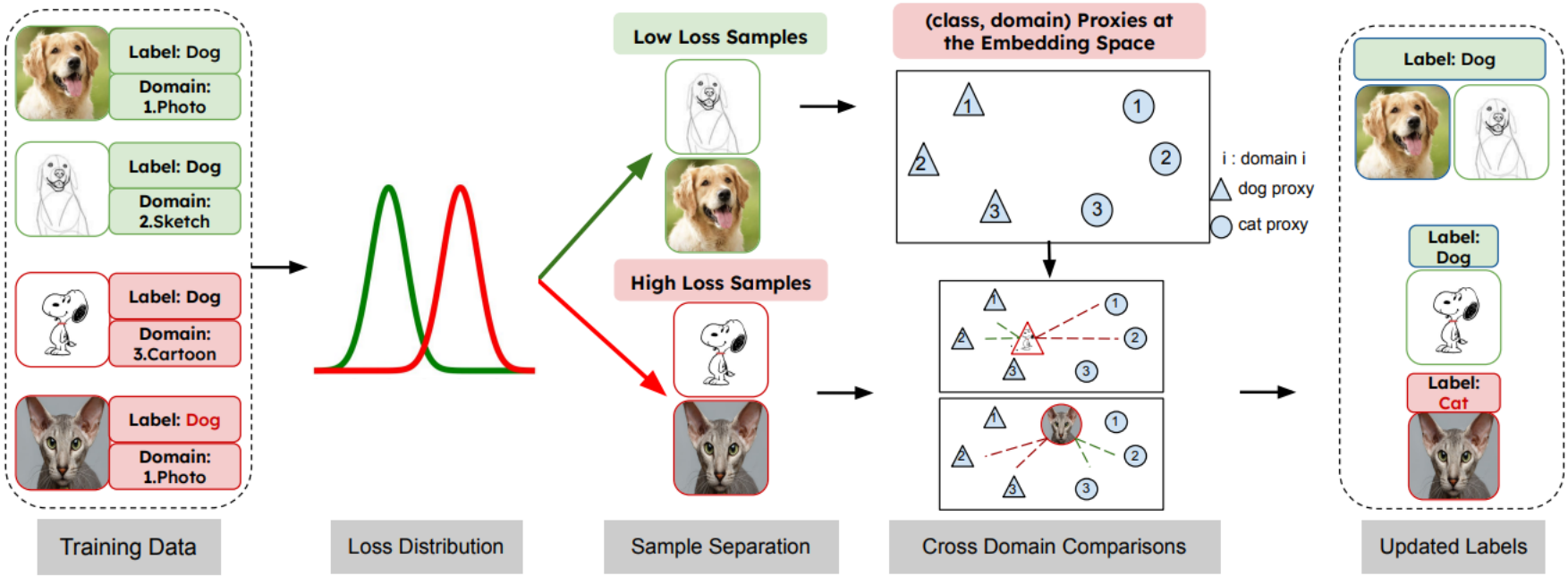

Classification Accuracy on VLCS

	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**

BOSTON UNIVERSITY

Thank you!

Paper: