

# Domain Adaptation

Addresses distribution shift between training (source) and test (target) domains

## Domain Distribution Shift



### Source Domain

Training data distribution

Labeled data available



Distribution Shift



### Target Domain

Test data distribution

Limited/no labels



### Example Scenario

Train on synthetic data → Test on real data



### Adaptation Techniques

Domain Adversarial Training

Self-Training

Pseudo-Labeling



Learn domain-invariant representations



Important for real-world deployment