Zero-Shot Learning Problem:
- **Training stage**: source domain attributes and target domain data corresponding to only a subset of classes (seen classes) are given.
- **Test stage**: source domain attributes for unseen (i.e., no training data provided) classes are then revealed.
- **Task**: for unseen data, match target domain unseen instances with source domain descriptors (classes).

**Our Approach:**

**Key Insight—Binary Hypothesis Testing**
- For a source and target domain instance pair: $H_0: y = 0$, $y' = 0$; $y, y' \in \{0, 1\}$, $1 \leq j \leq y$ = 1
- $H_1: y = 1$, $y' = 1$; $y, y' \in \{0, 1\}$, $1 \leq j \leq y$

Optimal Test Statistic:
$$f(x^{(t)}, x^{(s)}) = \log p(y=1|x^{(s)}) - \log p(y=0|x^{(s)}) \geq \delta$$

**Shared Latent Models**
- Decompose the posterior distribution with latent source and target domain attributes and for fine domain attributes for Saligrama.
- There exists a statistical relationship between latent co-occurrence patterns of corresponding source and target domain data pairs.
- This is a class-independent relationship which learn a "universal" similarity function.

**Learning Principle**
- **Target latent domain**: good separation.
- **Source and target latent domains**: good alignment

**Motivation:**
- There exists a statistical relationship between latent co-occurrence patterns of corresponding source and target domain data pairs.
- This is a class-independent relationship which learn a "universal" similarity function.

**Visualization of target domain embedding on AWA**

**Experiments:**
- **Dataset statistics**
- **Parameter Sensitivity**
  - Akata et al. [2] 61.9 40.3
  - Lampert et al. [3] 57.2 72.0
  - Romero-Paredes and Torr [13] 57.5 62.3 62.1 72.0
  - SSE-INT [44] 41.5 0.34 71.52 0.79 30.19 0.59 82.17 0.36 57.01
  - SSE-ReLU [44] 46.2 0.5 76.15 0.85 30.41 0.20 80.98 1.32 58.87
  - (ii) int. \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \
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  - (iii) int. \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \
  - (iv) int. \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \
  - (ii) Alg. 1 \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(s)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \(w^{(t)}\) \
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**Visualization of source domain embedding on AWA**

**Exp I: Zero-Shot Recognition**

**Exp II: Zero-Shot Retrieval**

**Table 1: Retrieval performance comparison (%) using mAP.**

**Table 2: Retrieval performance comparison (%) using mAP on AWA.**

**Reference:**


Postdoc positions & code available: https://zimingzhang.wordpress.com/