Fine-Grained Generalized Zero-Shot Learning via Dense Attribute-Based Attention

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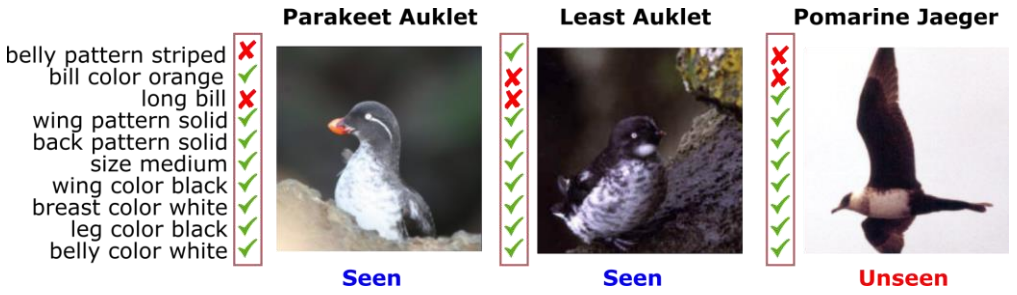
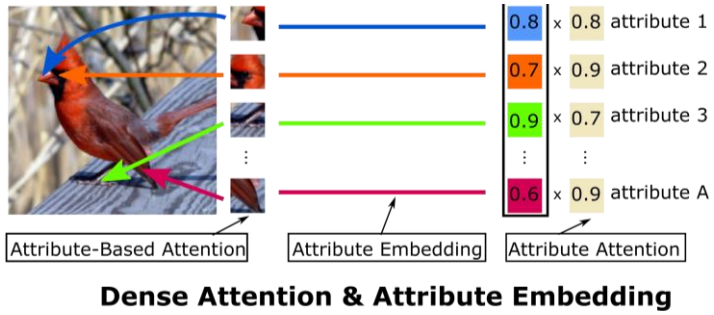
Motivation

- **Fine-Grained Recognition:**
  - Recognize visually similar objects ⟶ Must **localize attributes**
  - Experts annotation is **costly**

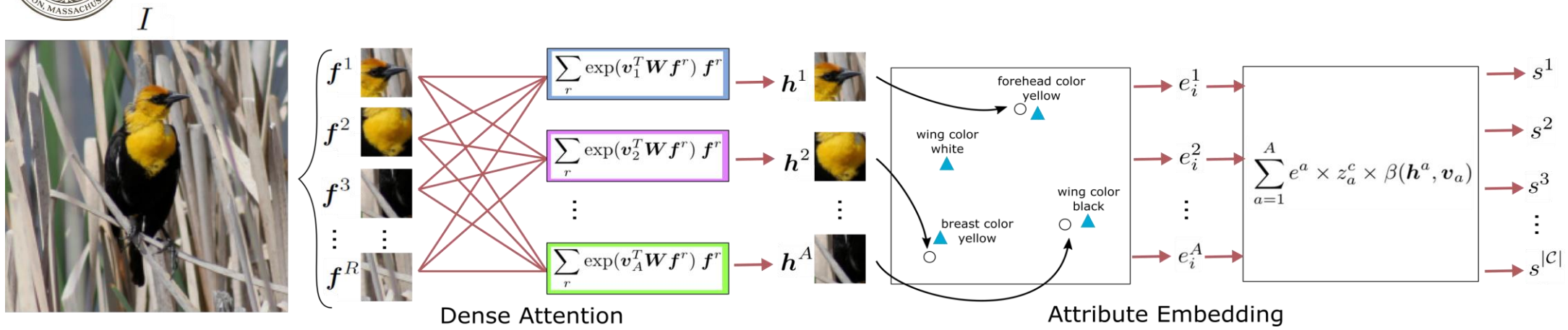


- **Zero-Shot Learning:**
  - Generalize to **unseen classes** using annotations from **seen classes**
  - Existing methods **cannot localize** attributes without bbox annotations



- **Contributions:**
  - **Dense Attention:** **capture** attribute details
  - **Attention Embedding:** **transfer** attribute details

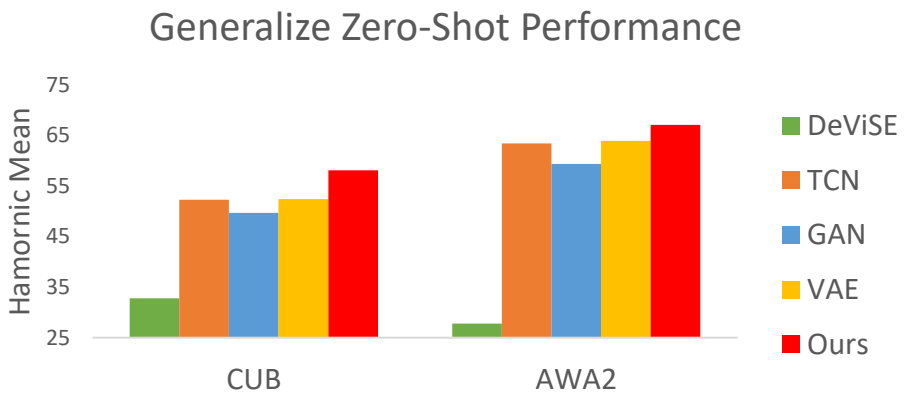
Proposed Architecture

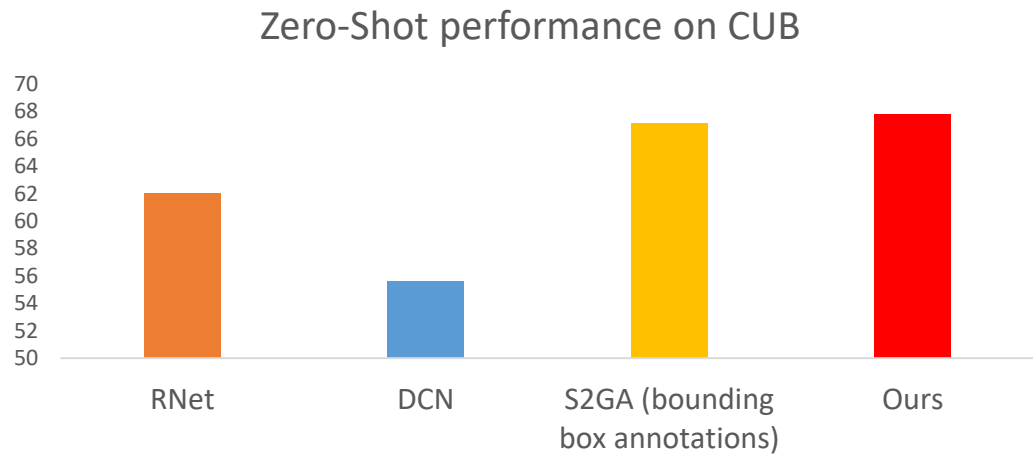


- Encode attributes into **multiple features**
- **Dense Attention** has **multiple soft-attention channels**:
  - Output **attribute features** h^a
  - Guide by **attribute semantic** v_a (word2vec of the attribute name)
- **Attribute Embedding**:
  - Compute each **attribute score** e^a from attribute feature
  - Compute **class score** s^c as sum of attribute scores

Experiments

- **Outperform SOTA** on **ZSL** and **Generalized ZSL**





- **Dense Attention** **localizes** present attributes and **finds evidence** for absent attributes