

Hierarchical Classification based Deep Visual Recognition

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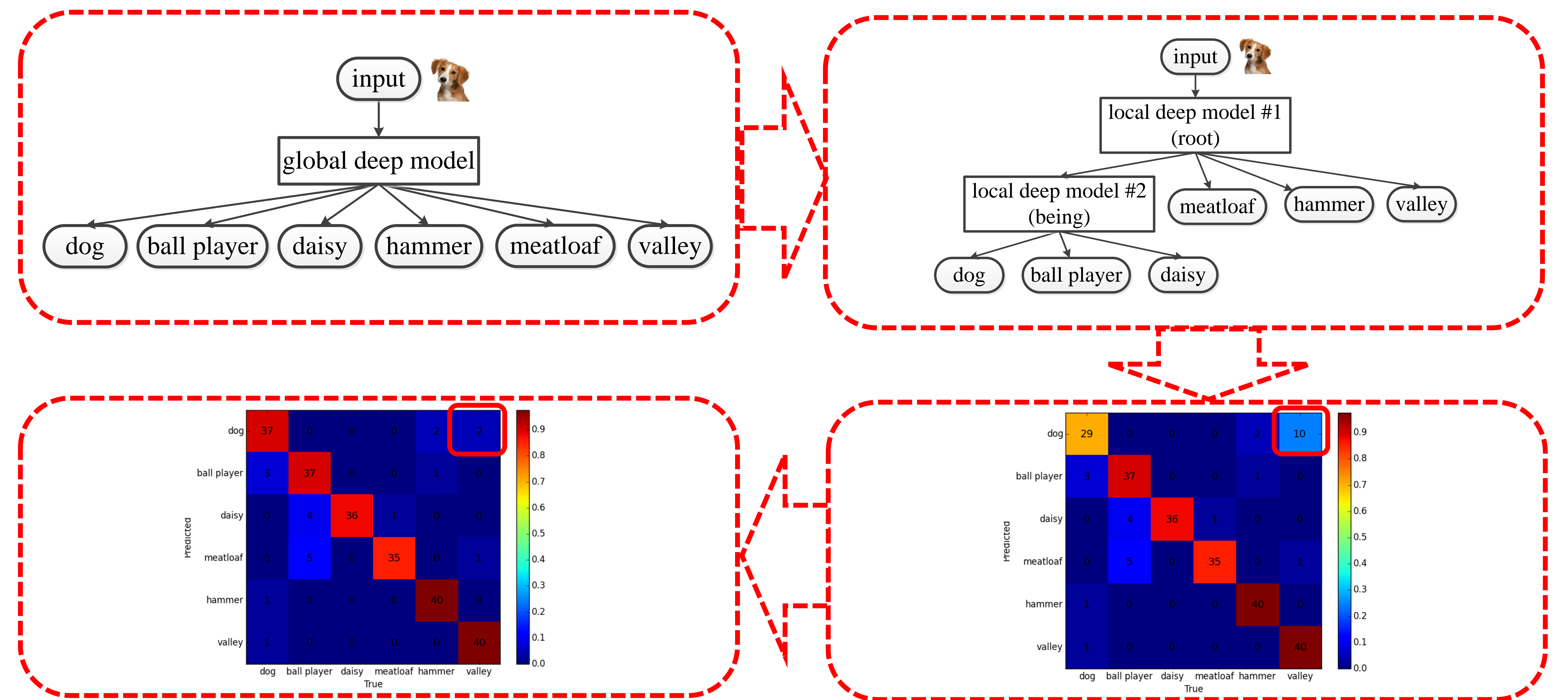
Key intuition

A. Challenges

- Performance is boosted by increasing network sizes (GoogleNet has 22 layers, Microsoft uses 152 layers)
- Computational complexity in training (weeks on GPUs)



Example



Hierarchical prediction + Binary verification = Global prediction

Methods

A. Hierarchical classification

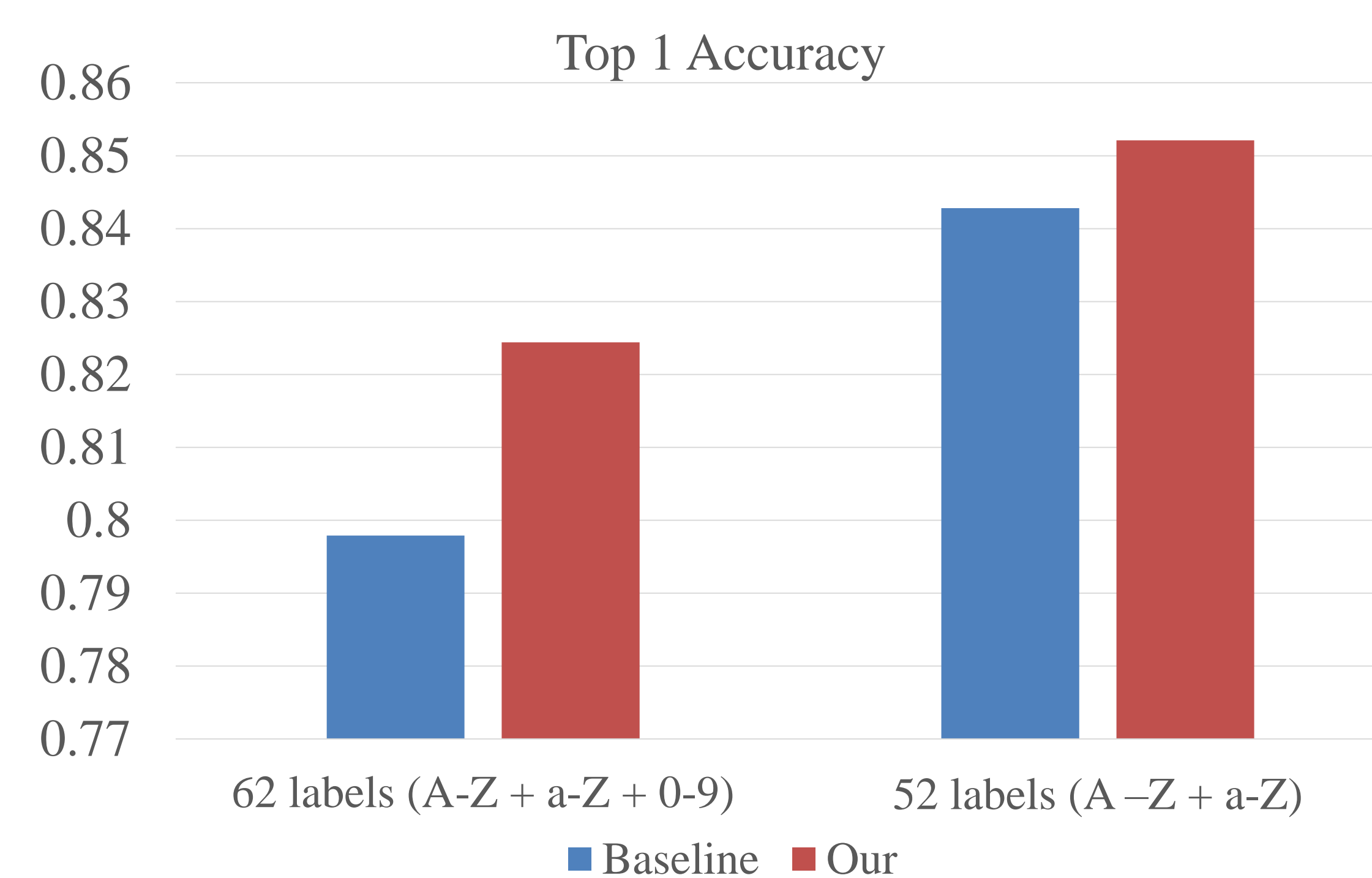
- Semantic similarity
- Visual Similarity
 - Hierarchical k-means
 - Hierarchical spectral clustering

B. Binary verification

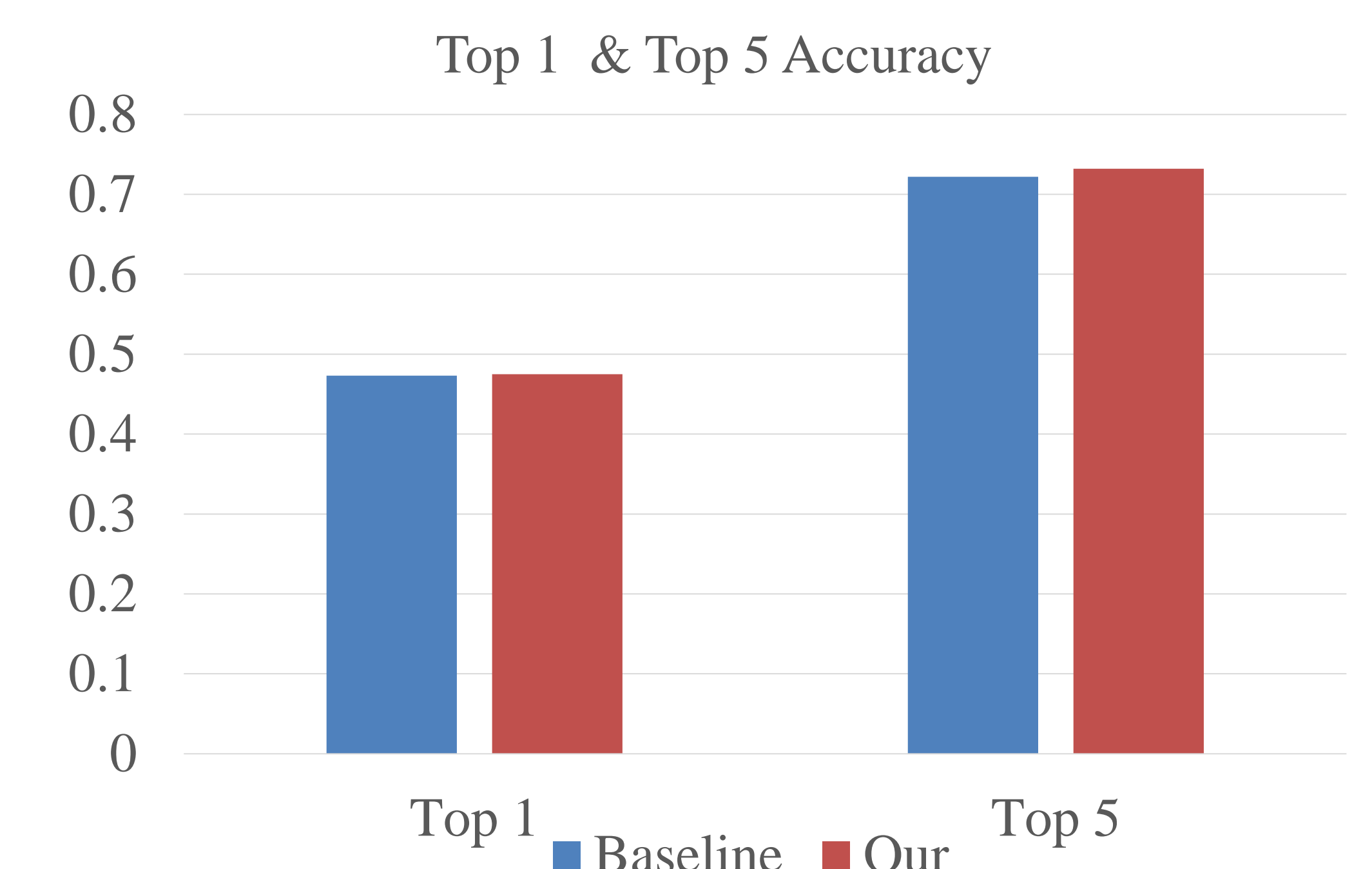
- Compute confusion matrix
- Find error-prone label pairs
- Build binary deep verification classifier for each pair

Results

Performance on the 74K database



Performance on the Caltech database



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