Goal: Discover novel objects and learn models to detect them without human supervision.

Our Discovery and Localization Benchmark & Framework

- Large-scale, realistic benchmark for object discovery & localization
- Scalable never-ending in-the-wild concept discovery framework

Dual Memory Framework for Unsupervised Object Discovery

- Framework: Iterative, Online, and Scalable
- Contains clusters ("slots"), represented as a Centroid or a Classifier
- Working Memory: Short-term memory, Null init., Unreliable associations
- Not scalable

Dual Memory

- Storage: Dual Memory
- Retrieval: Decide seen/unseen?
- Classifier: Slow updates, Accurate, Infrequent updates
- Centroid

Benchmark Details and Results

Smaller-scale Object discovery on subsets of COCO train2014. Comparison with contemporary discovery methods using AuC for unknown classes.

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<th>Conf.</th>
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<th>CorLoc</th>
<th>CorRet</th>
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†: OOD with ResNet-101 Faster R-CNN/proposal and classification-head features (same as Ours)