

### Fine-grained Animal Recognition



w/o KB: hornbill  
w/ KB: southern ground hornbill

### KB-enhanced Captioning

w/o KB: A hornbill leaps with wings spread wide against a clear blue sky.

w/ KB: A Southern Ground Hornbill with typical red throat, leaps with wings spread wide against a clear blue sky, maybe found in the southern regions of Africa.

## Case Study

### ① Zero-shot Recognition



cat

dog, cat, ...



ginger cat

dalmatian is ...  
ginger cat is ...

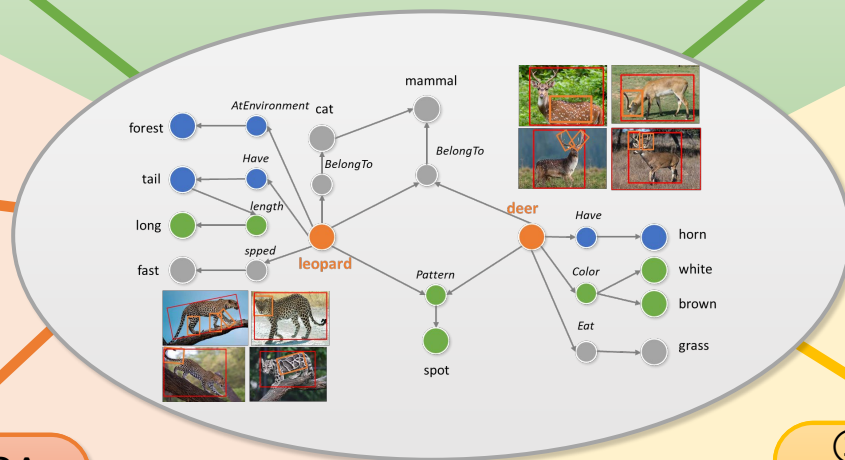
### ② Fine-grained VQA



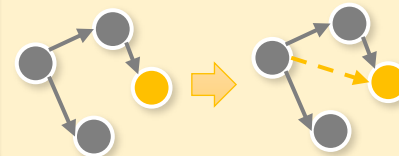
Q: The patterns on the animal in the image will **change** during growing?

w/o KB: No. (for most dogs)

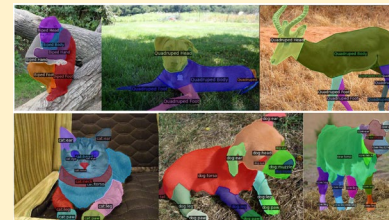
w/ KB: **Yes**. (for dalmatian)



### ④ Benchmark for KGC



### ③ Benchmark for Part Localization



**KB for Applications**

## Multi-modal AnimalKB

**KB as Benchmarks**