# Object Recognition and Image Parsing of Natural Images

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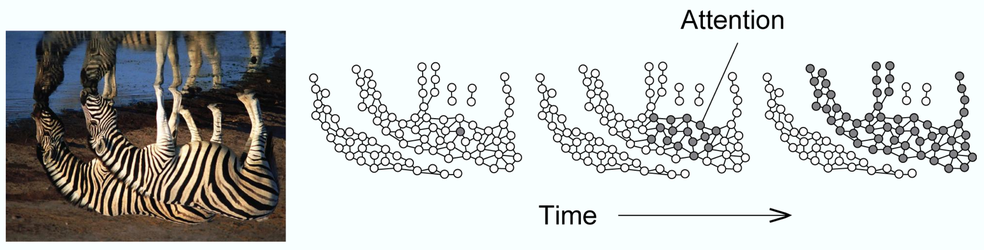
## Introduction

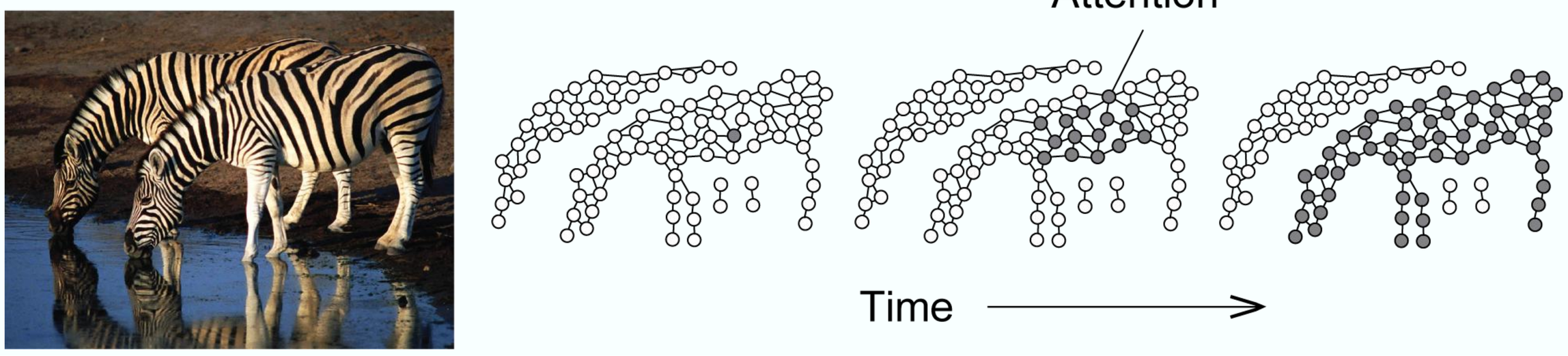
The visual system groups parts of an object together and separates objects from the background and each other. A widely held view is that the grouping process occurs without attention and in parallel across the visual scene. However, we challenge this view and hypothesize that attention spreads from one point on the object towards the boundaries, thereby labeling the perceptual object as one entity in the visual cortex.

## Research Questions

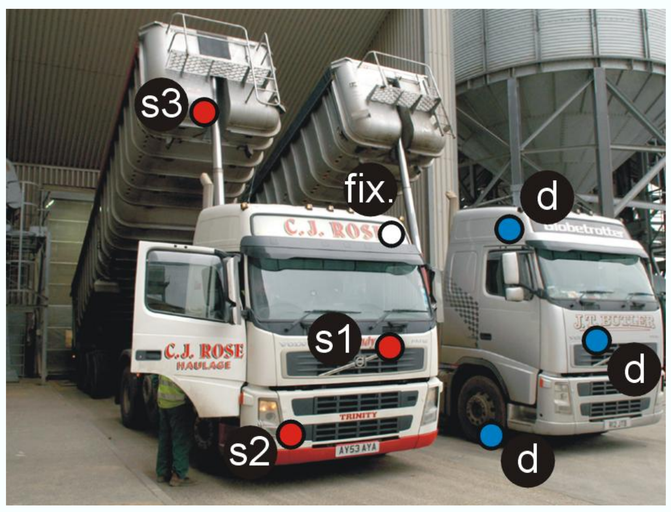
**RQ1**: What is the time-course of image parsing in natural images?

**RQ2**: What is the effect of object-familiarity on image-parsing?

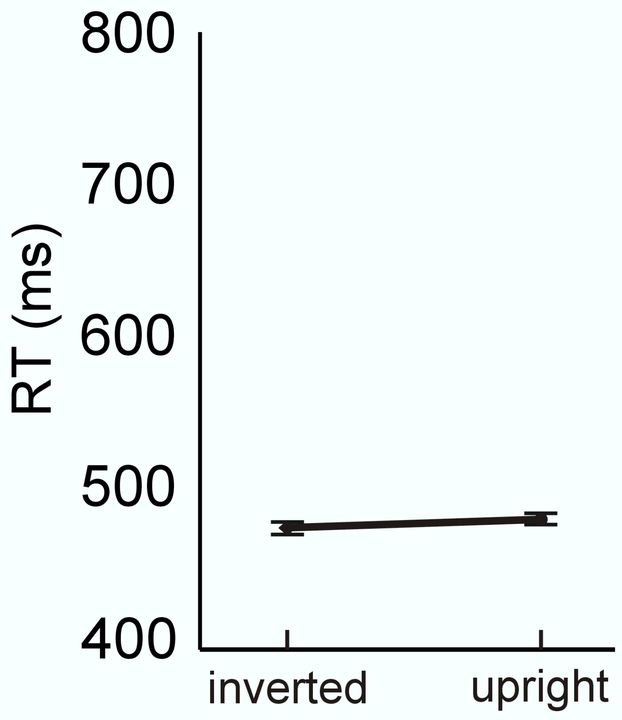


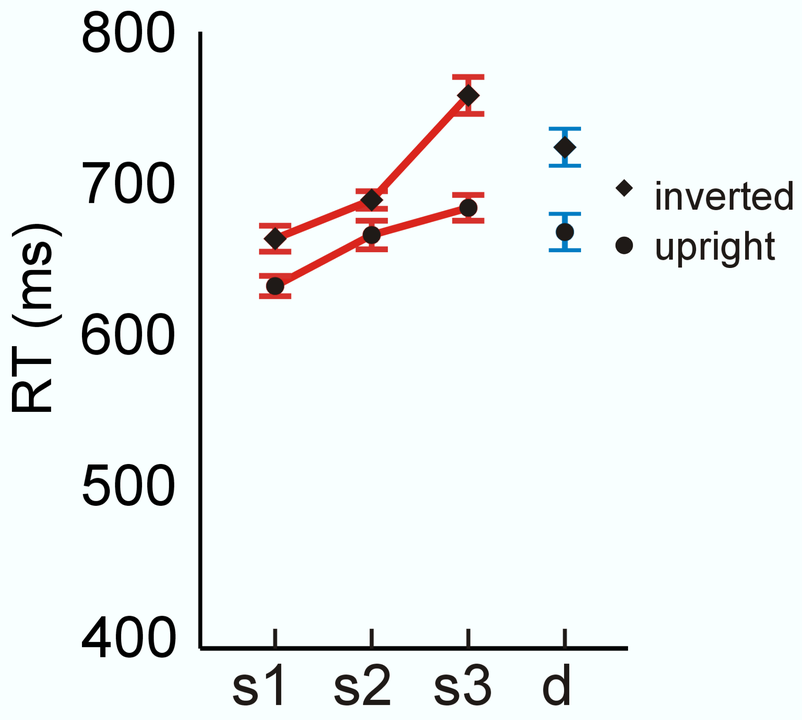

## Classification / Image-parsing




## Classification




## Image-parsing




## Psychophysics

**Task 1 – Classification**
Animals or vehicles?

**Task 2 – Image-parsing**
Cues on same or different object?

Both tasks were done with up-right and inverted images to manipulate familiarity.

## Results

**Task 1:**
Classification of animals and vehicles was always fast and efficient.

**Task 2:**
Participants were slower when the distance between cues was larger, and even slower when cues are on different parts of the object. Up-right images were parsed faster than inverted images.

## Conclusion - Discussion

**1a) Object classification is done before image-parsing is completed;**

**1b) Delayed RTs for cues further away indicate that attention 'slowly' spreads across an object in a serial manner to group all elements;**

**2) Object familiarity facilitates image-parsing.**

**> Attention spreads in visual cortex to label the neurons that code for this object in order to group its elements together to one entity.**