

Chapter 1, Episode 4: The problem of pixels and an intro to assistive technologies

Many assistive input technologies “navigate”



A person in a wheelchair operating an old computer using a desk-mounted sip and puff device called the POSSUM.

Image credit: [Wikipedia](#), Public Domain, 1960. Photographer: Possum Ltd.

Screen readers processes 1 input at a time

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Cat

262 languages

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From Wikipedia, the free encyclopedia

This article is about the species commonly kept as a pet. For the cat family, see **Felidae**. For other uses, see **Cat (disambiguation)** and **Cats (disambiguation)**.

The **cat** (***Felis*** **species**) in the f**domestication** c**and farm cat**, b**companionship prey like mice** s**sense of smell** are well developed. It is a **social species**, but a solitary hunter and a **crepuscular predator**. **Cat communication** includes vocalizations like **meowing**, **purring**, trilling, hissing, **growling**, and grunting as well as **cat body language**. It can hear sounds too faint or too high in **frequency** for **human ears**, such as those made by **small mammals**. It also secretes and perceives **pheromones**.

Female domestic cats can have **kittens** from **spring** to late **autumn** in **temperate zones** and throughout the year in **equatorial regions**, with **litter** sizes often ranging from two to five kittens. Domestic cats are bred and shown at events as registered **pedigreed cats**, a hobby known as **cat fancy**. **Animal population control** of cats may be achieved by **spaying** and **neutering**, but their proliferation and the abandonment of pets has resulted in large numbers of feral cats worldwide, contributing to the extinction of **bird**, **mammal**

cat, is the only **domesticated** have shown that the monly kept as a **house pet** is valued by humans for it is adapted to killing **small ath**, and its **night vision** and

Cat
Temporal range: 9,500 years ago – present

Movement between tasks becomes cognitively expensive

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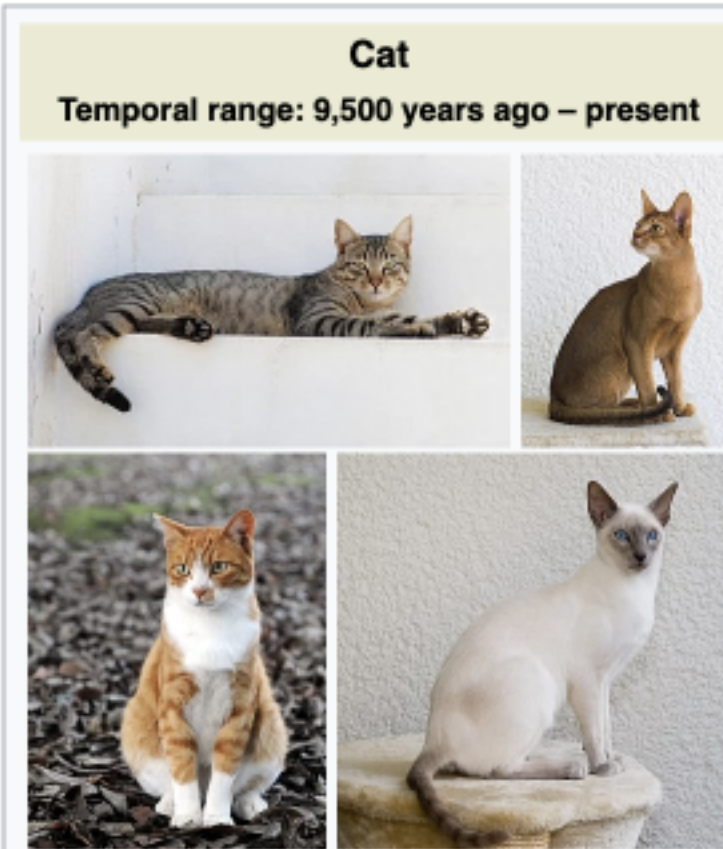
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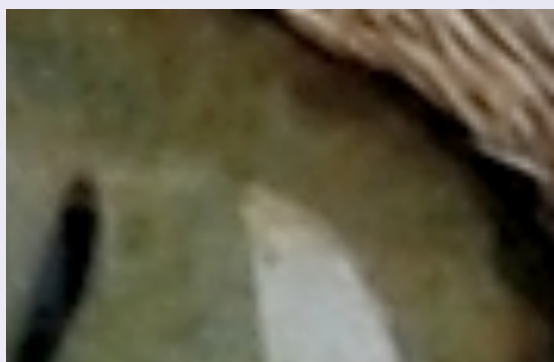
Why are pixels so much trouble?



100%



500%



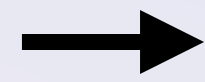
3000%



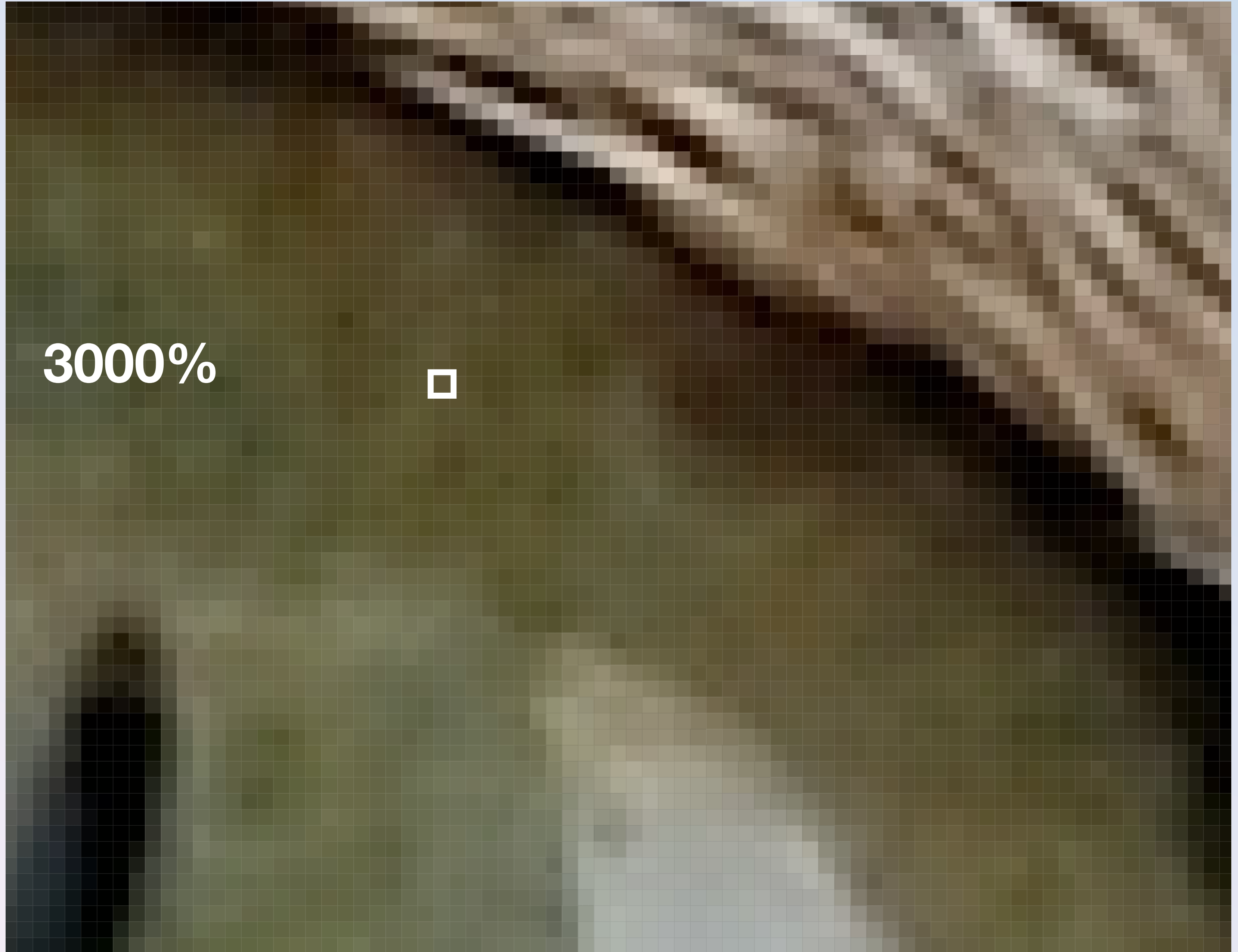
100%



500%



3000%



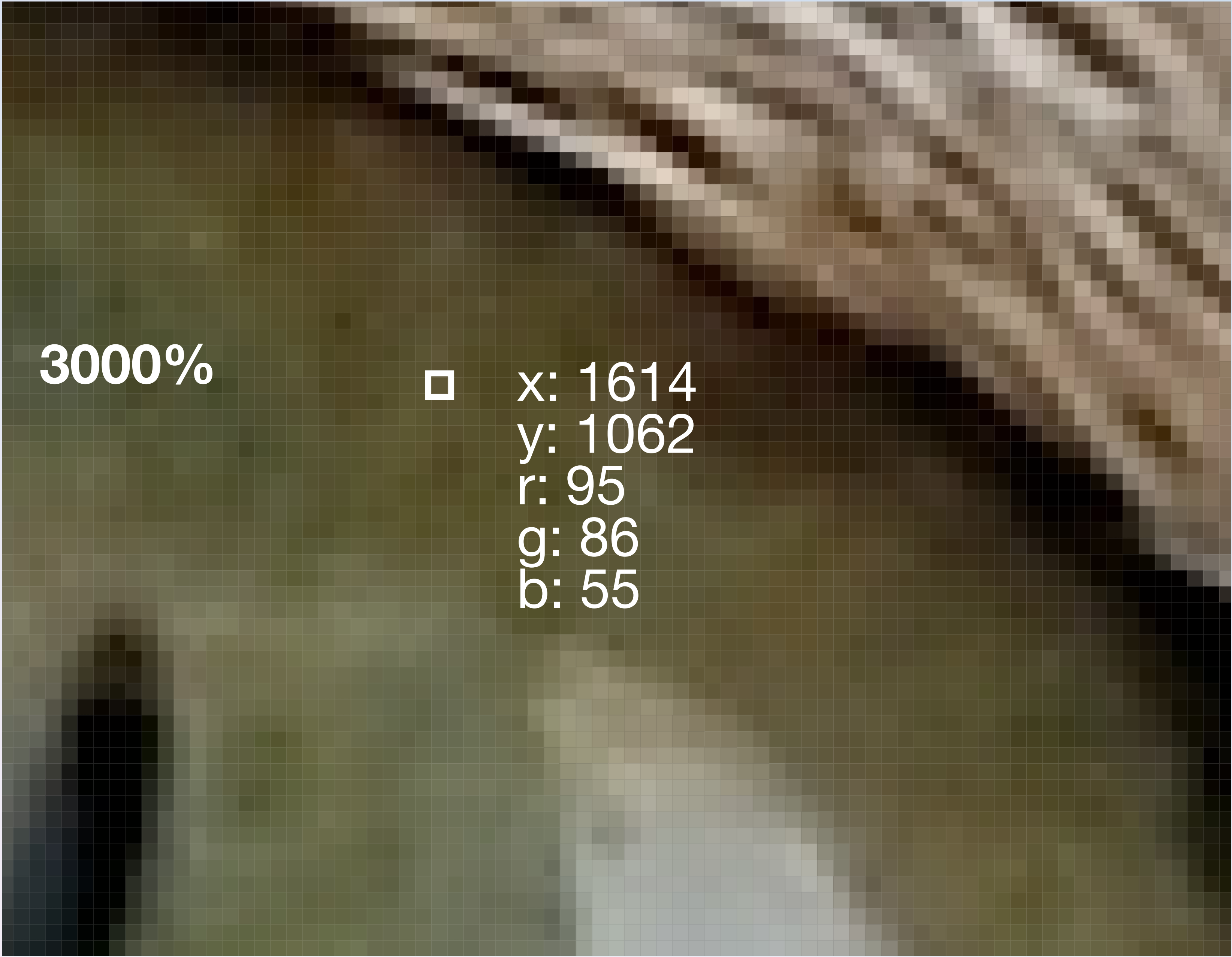
100%



500%



3000%



□ x: 1614
y: 1062
r: 95
g: 86
b: 55

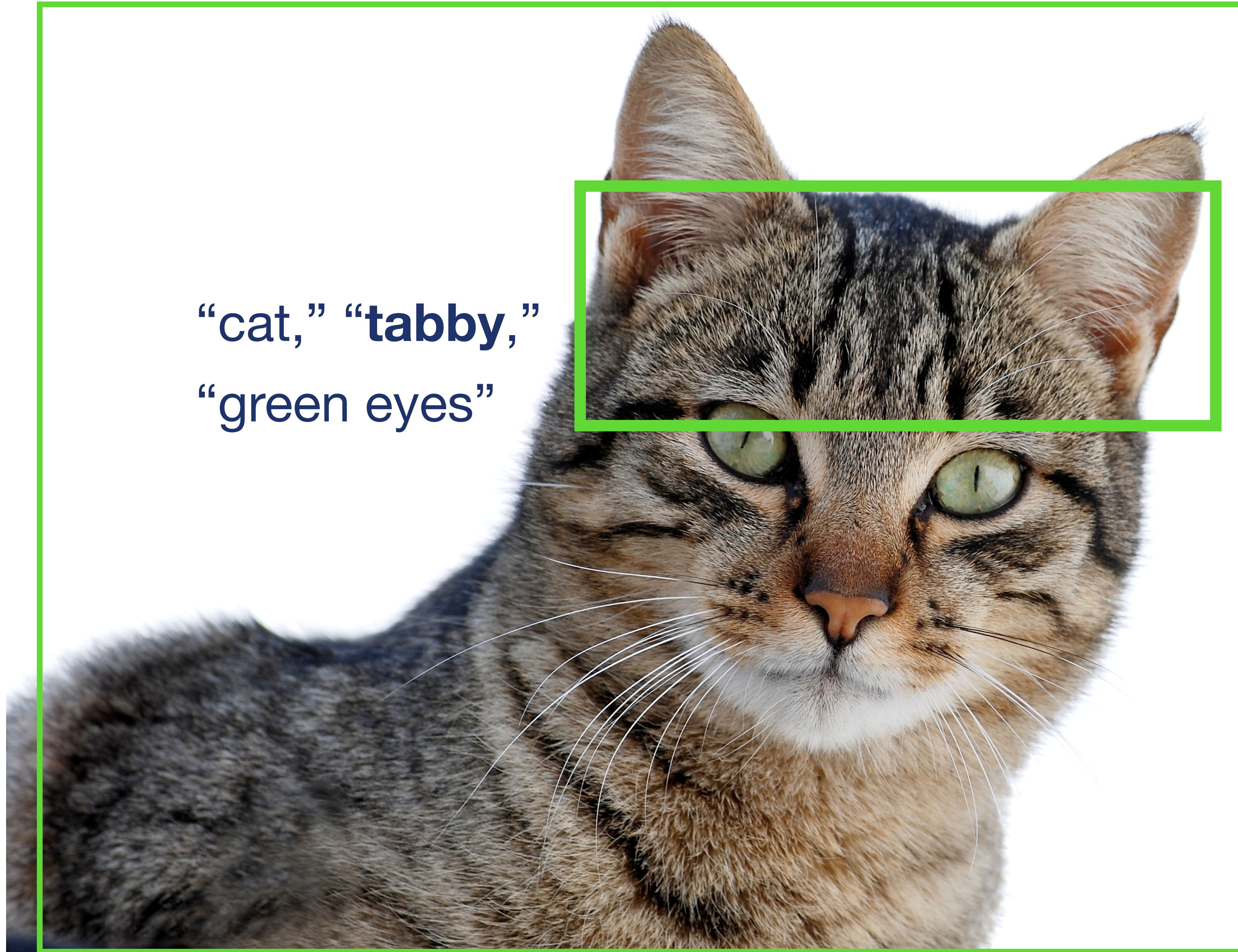
“cat,” “tabby,”
“green eyes”



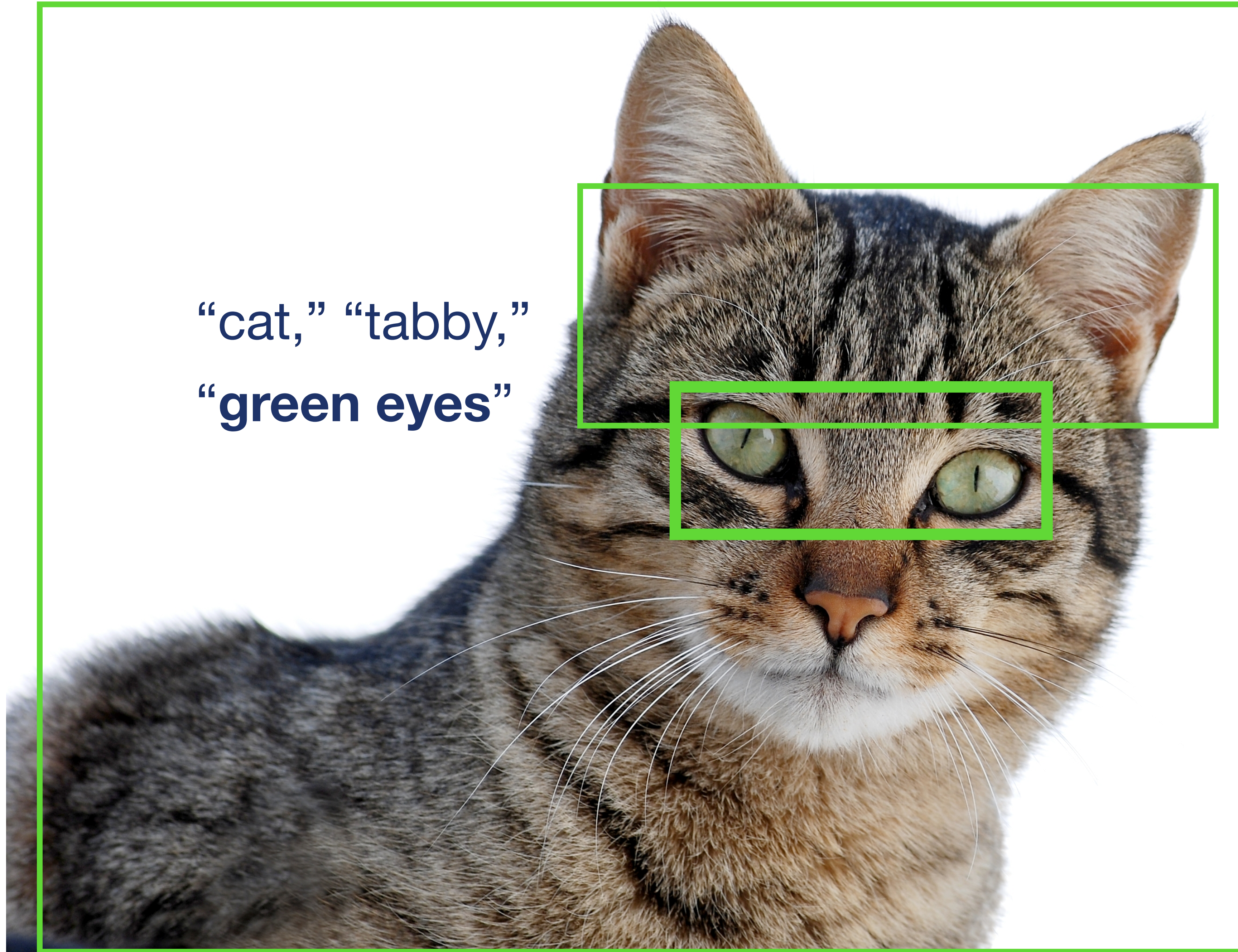
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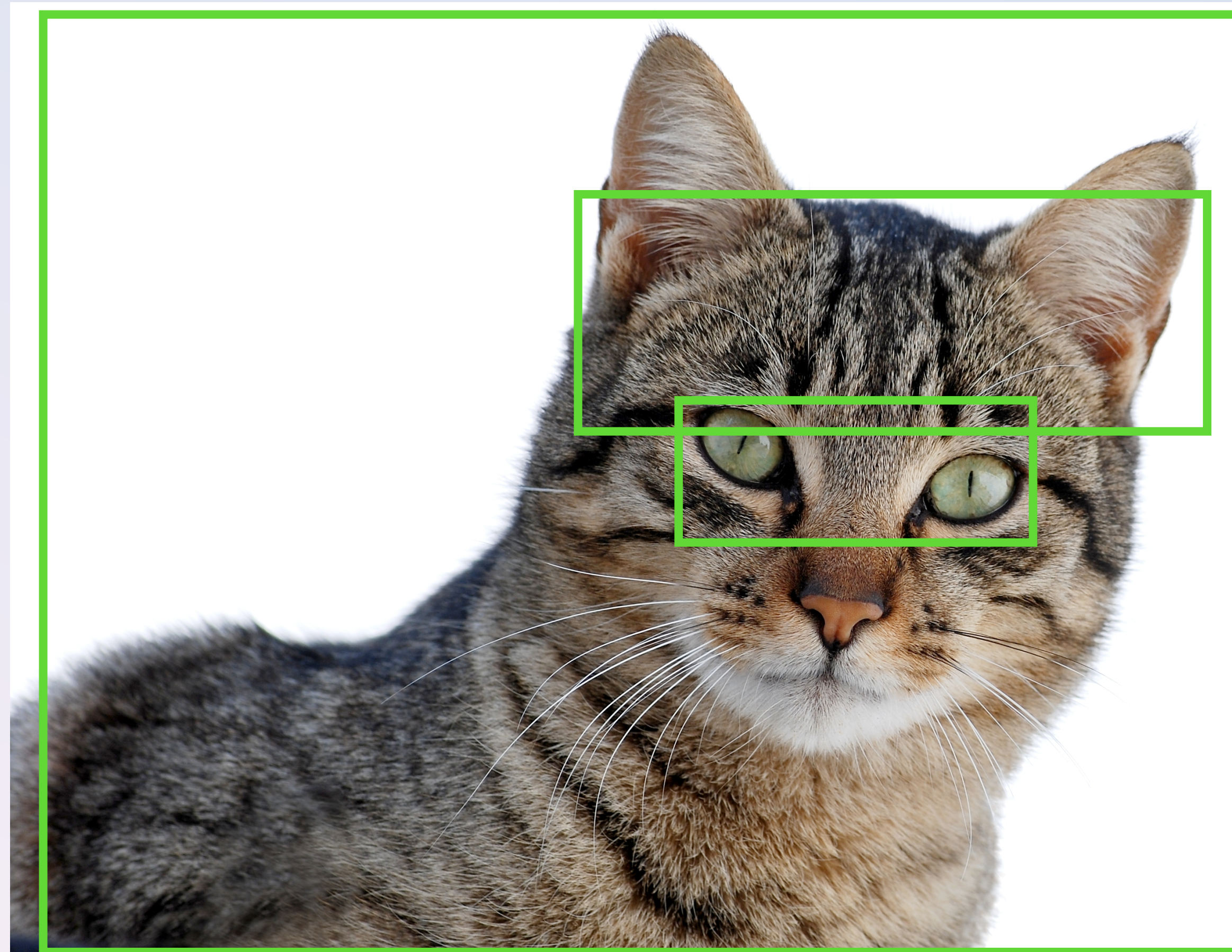
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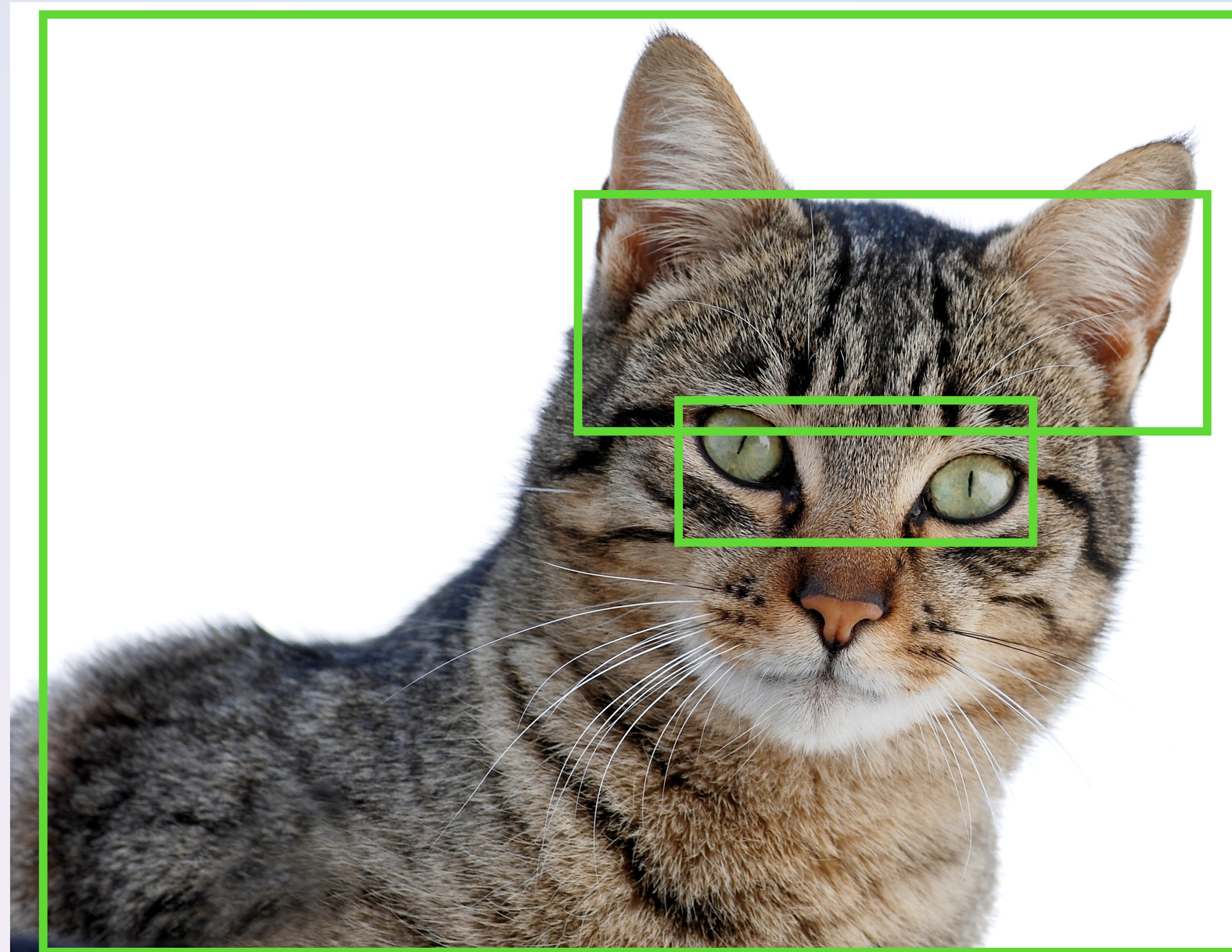
Computer vision is helpful when we don't have a ground truth



Computer vision is helpful when we don't have a ground truth



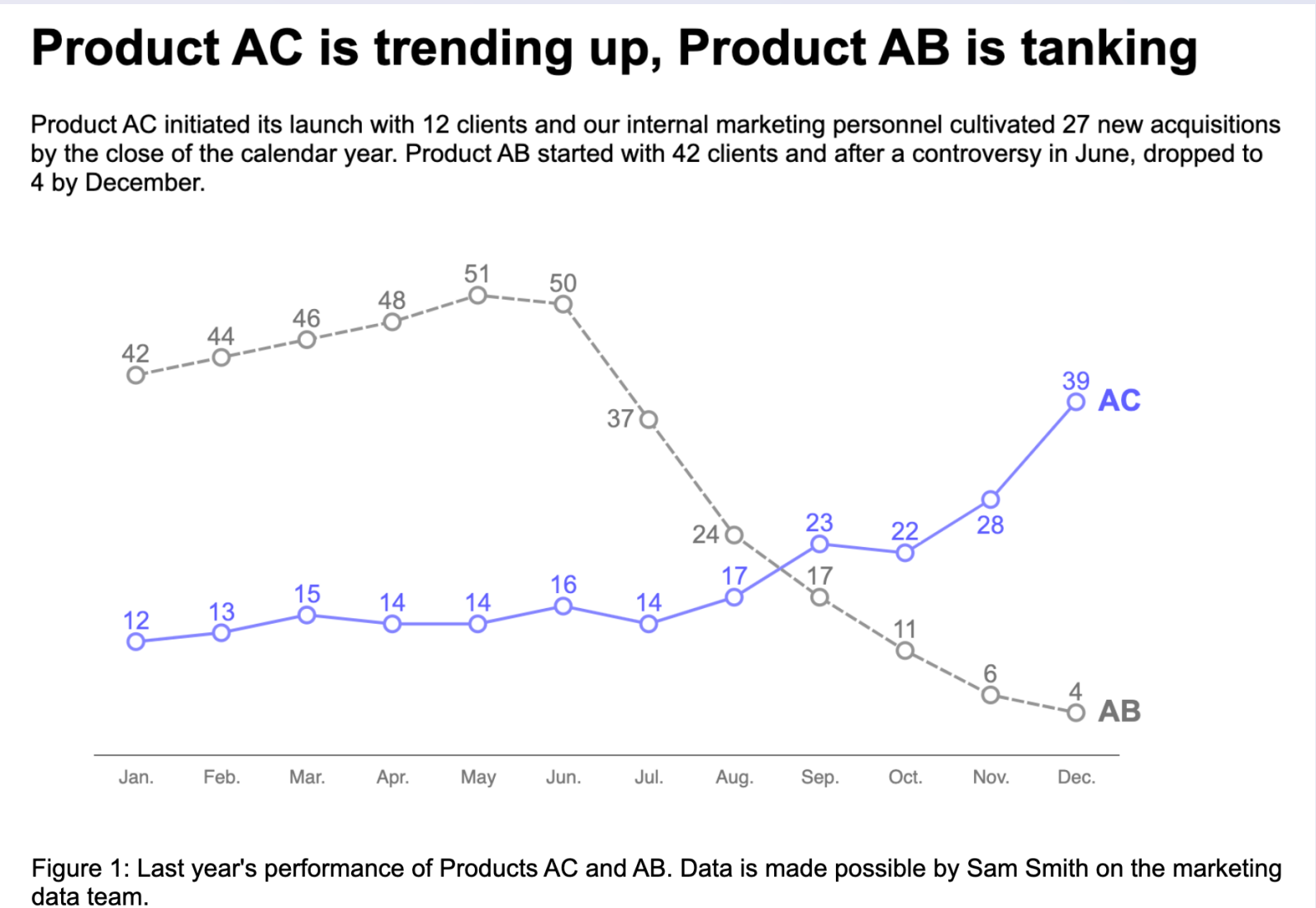
Computer vision is helpful when we don't have a ground truth



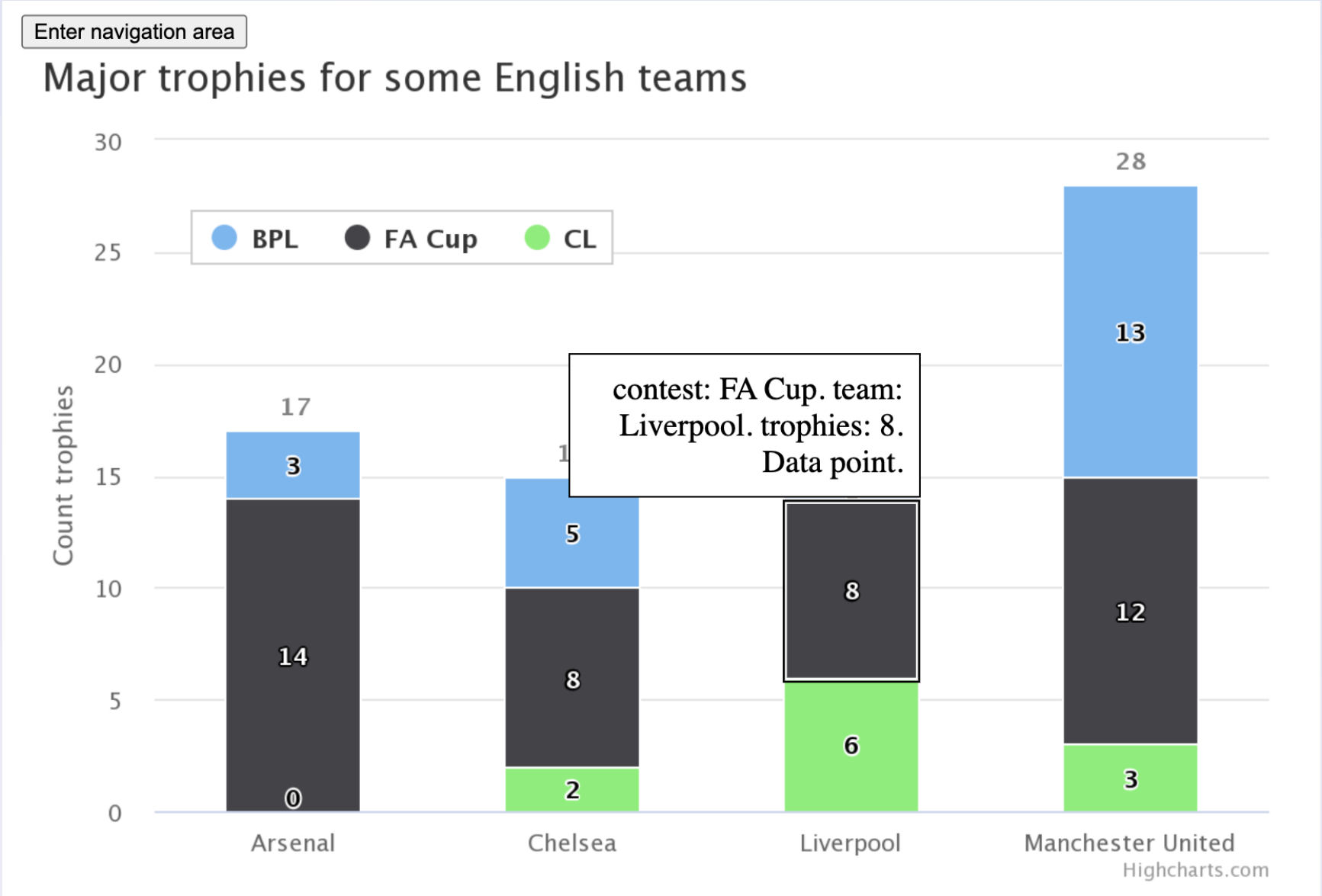
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But visualizations *do* have a ground truth: human-interpretable data

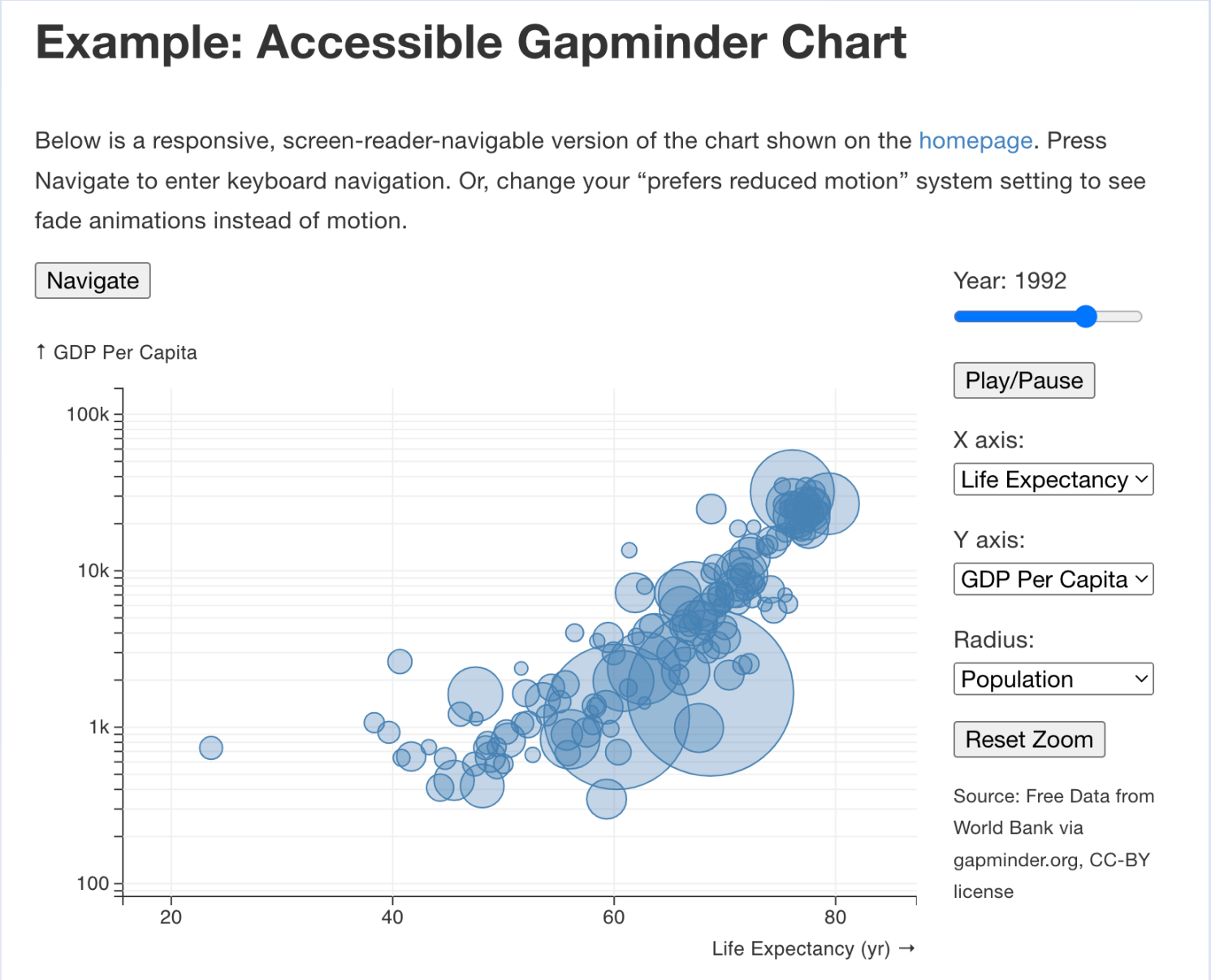
From data to pixels to ?? (three demos)



[First demo link](#)

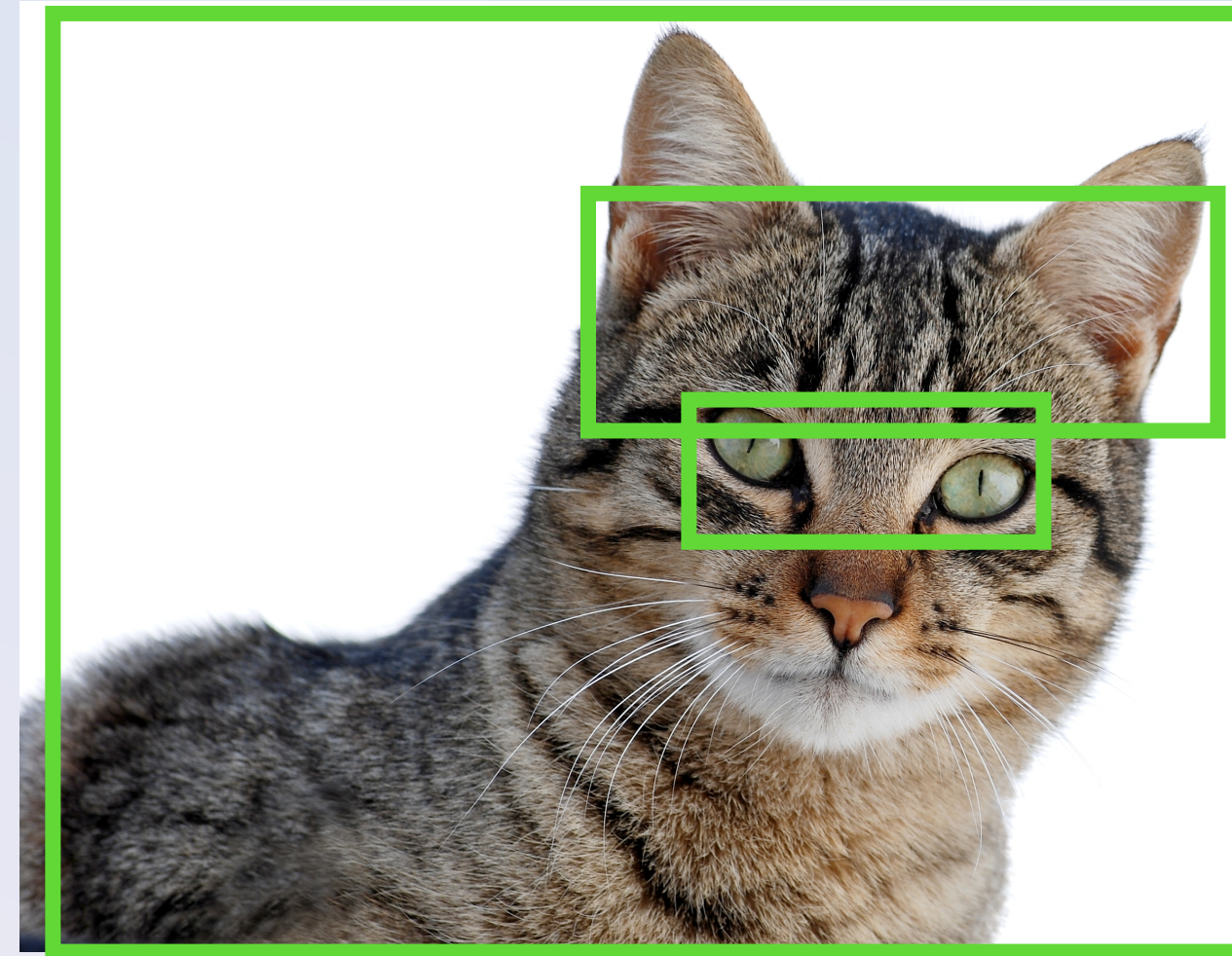


[Second demo link](#)



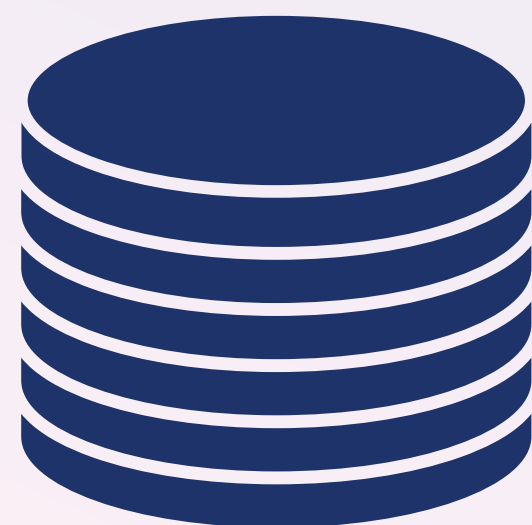
[Third demo link](#)

What is the ideal information flow for a visualization?



“cat,” “tabby,”
“green eyes”

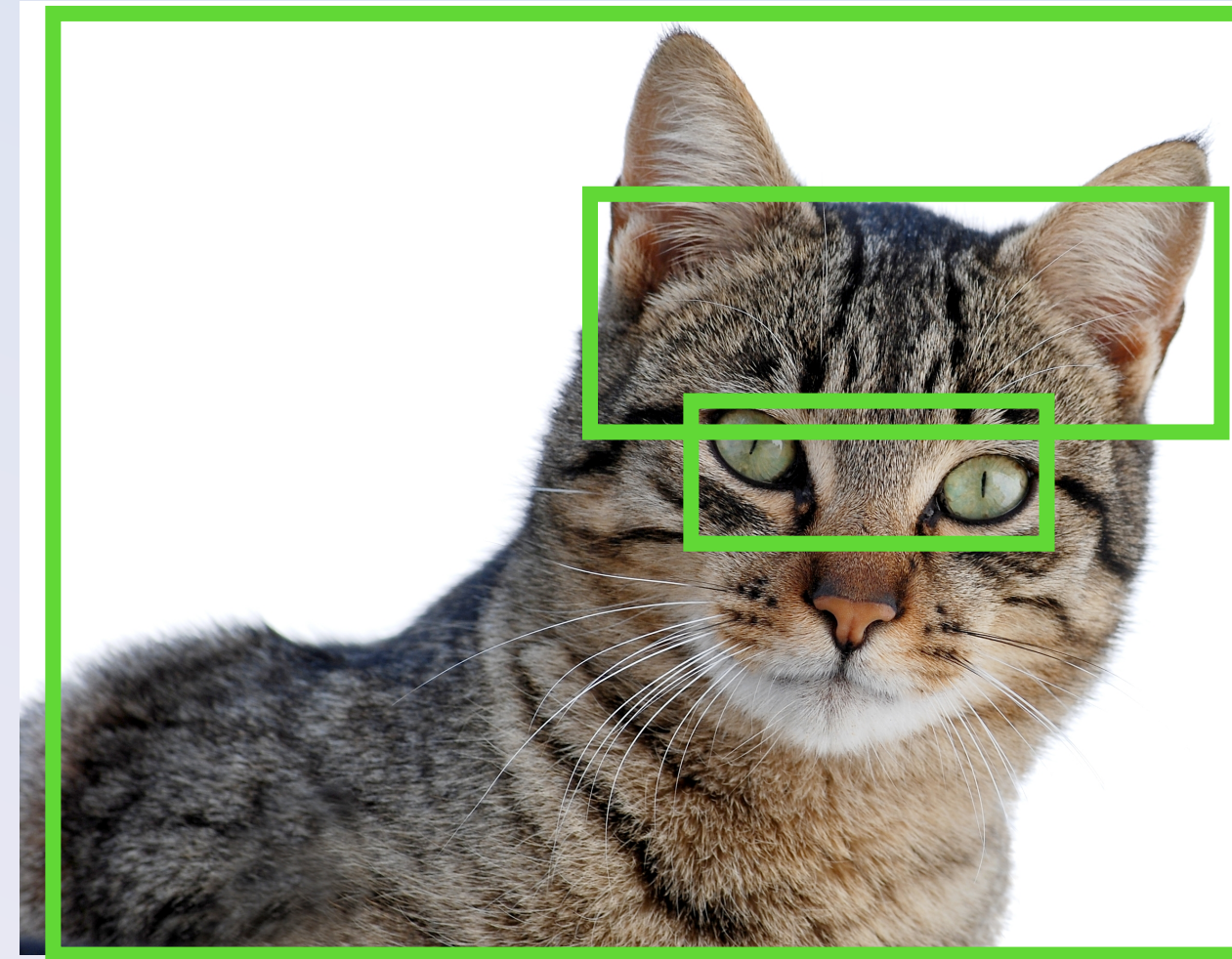
Data



Chart

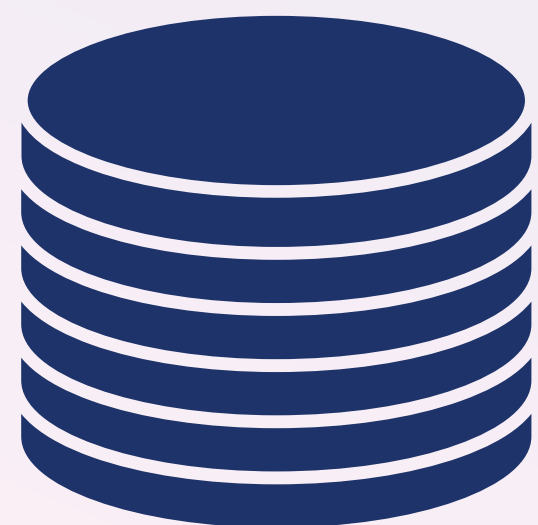


What is the ideal information flow for a visualization?

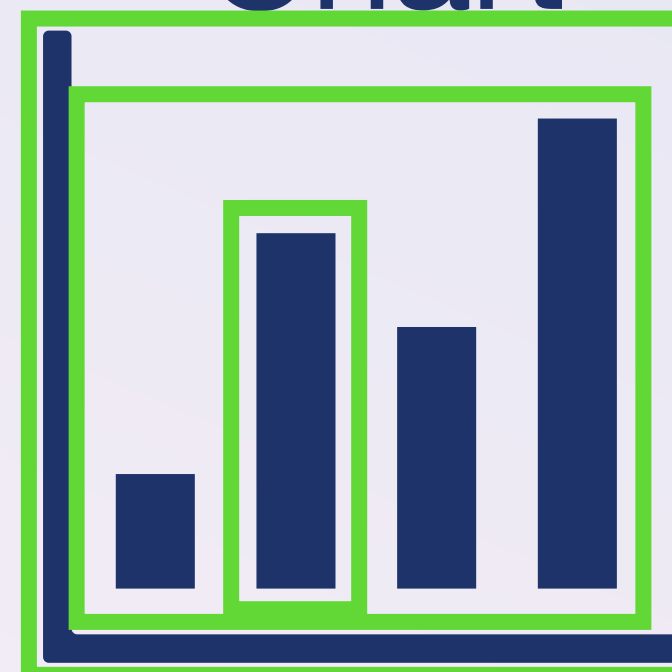


“cat,” “tabby,”
“green eyes”

Data



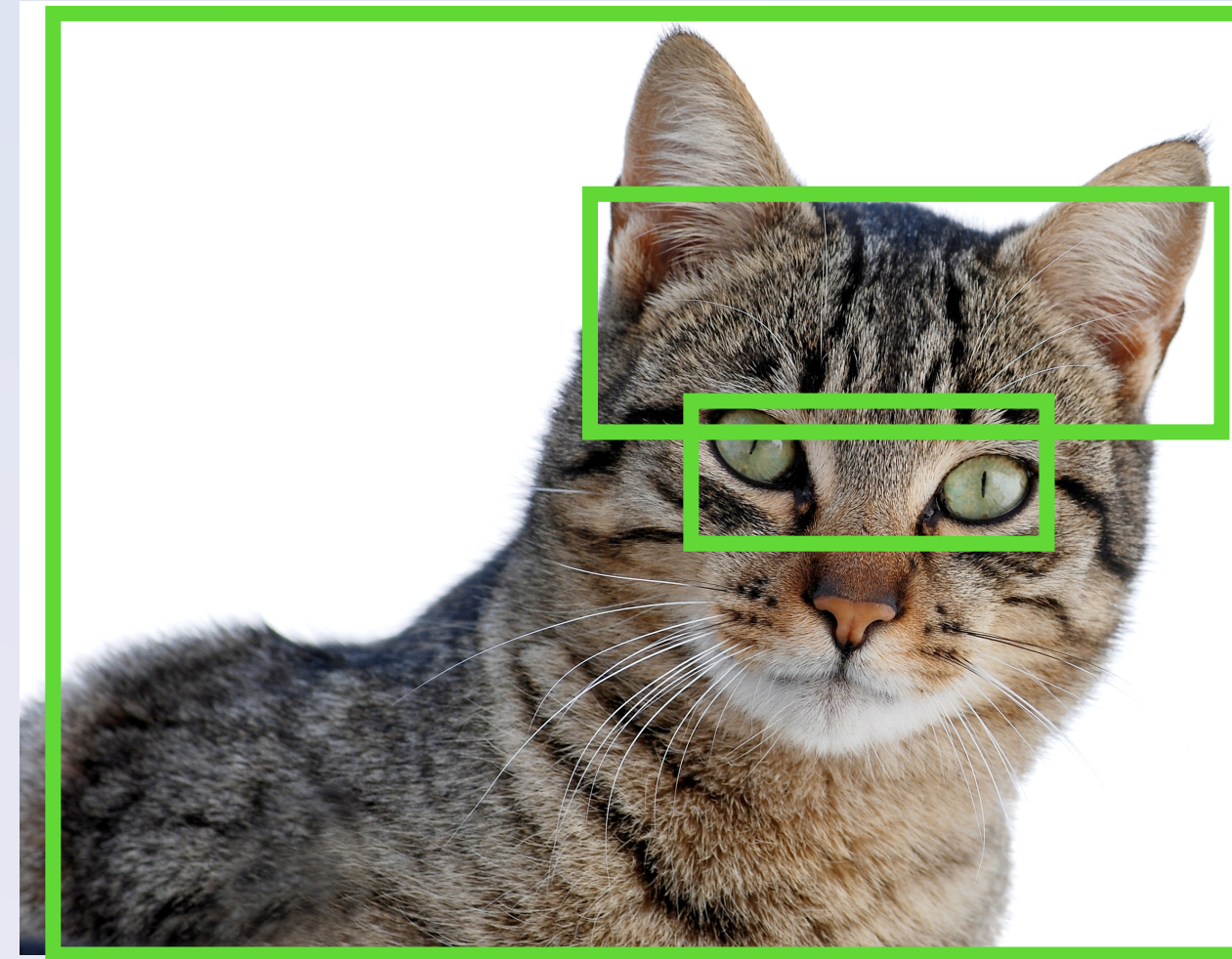
Chart



Model

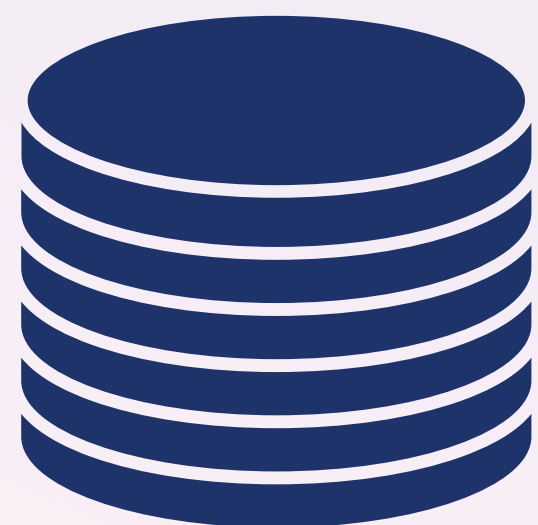
“bar chart,”
“trend up”

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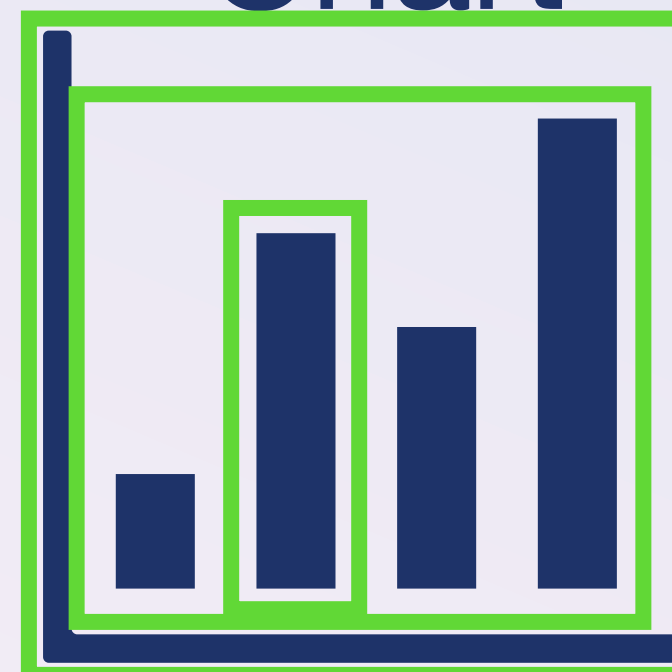


“cat,” “tabby,”
“green eyes”

Data



Chart



Error prone!

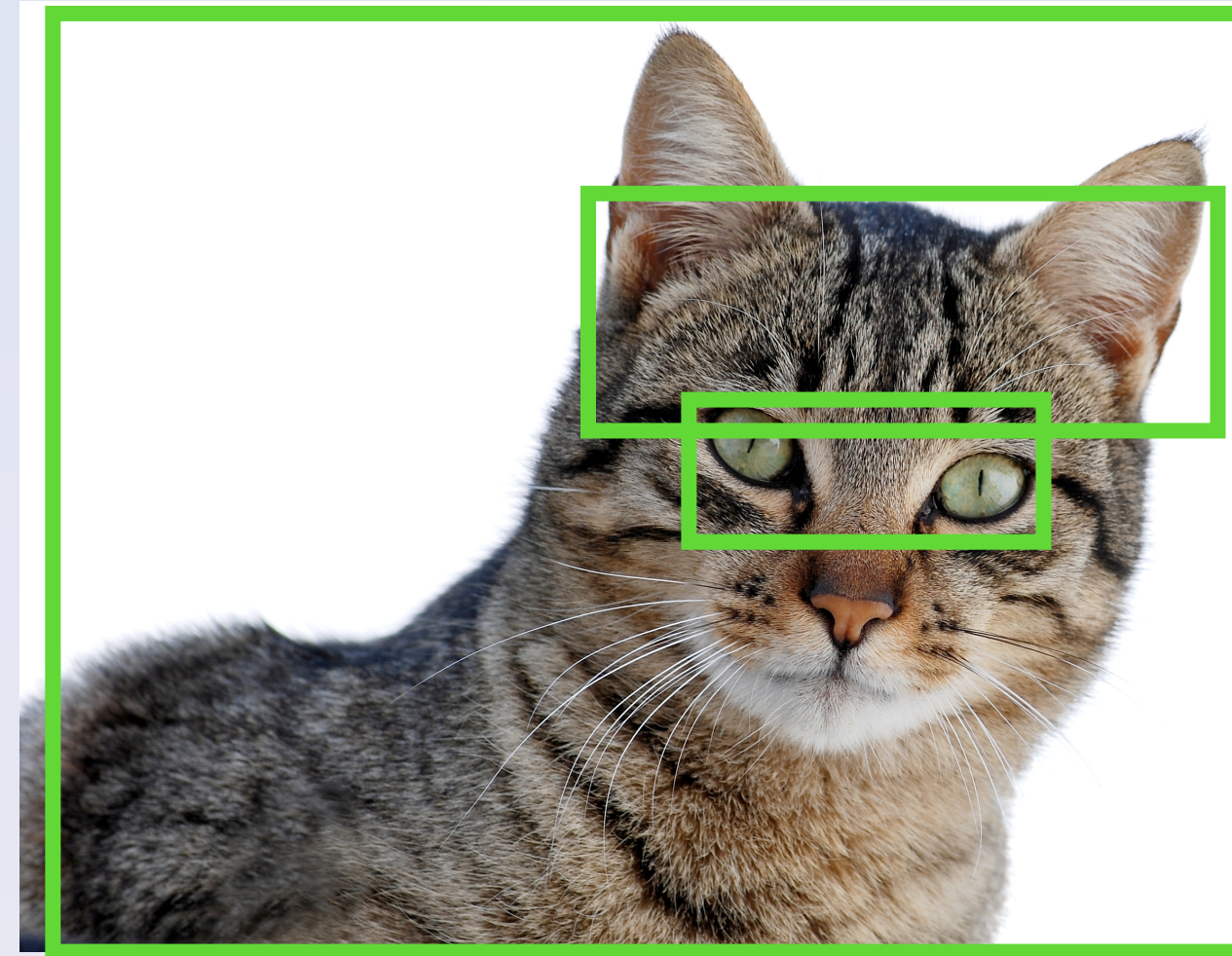


Model



“bar chart,”
“trend up”

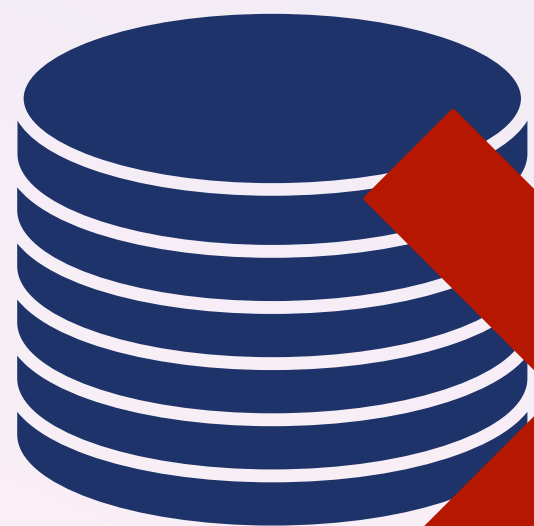
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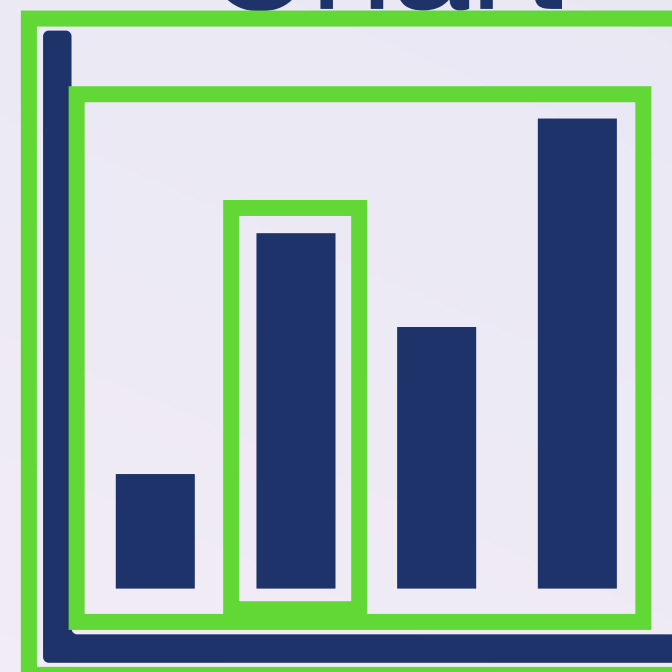
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No ground truth?

Data



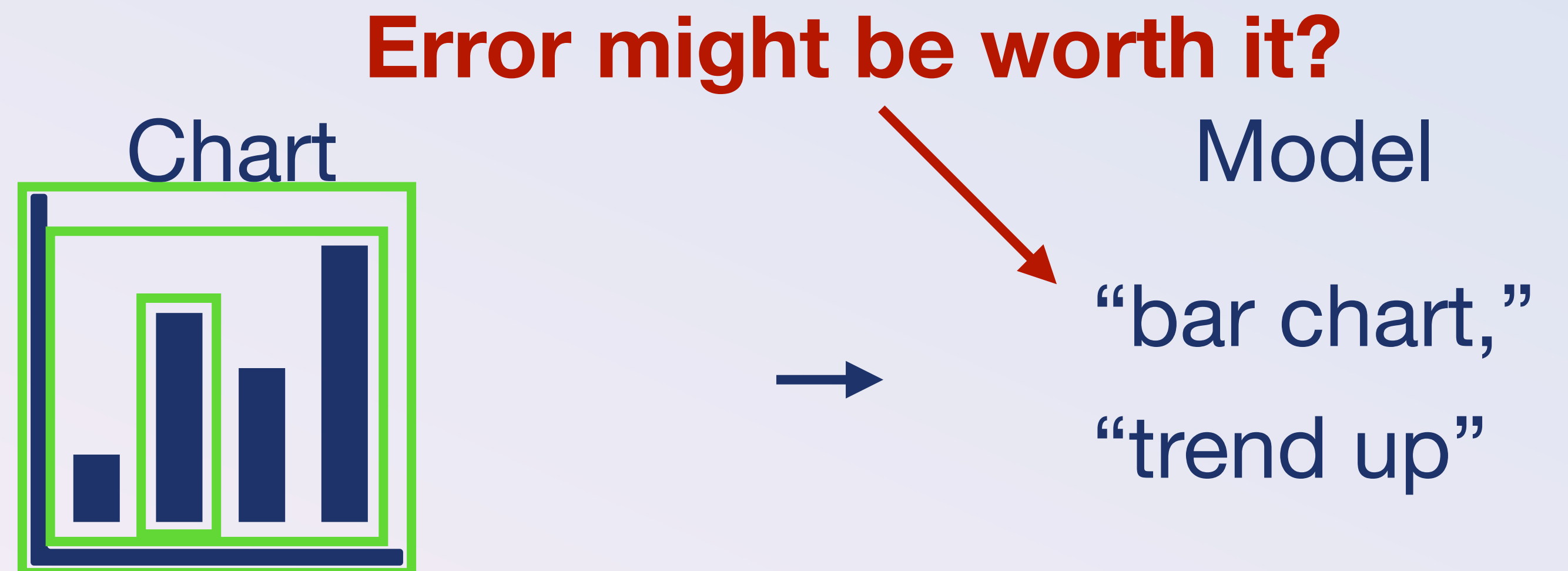
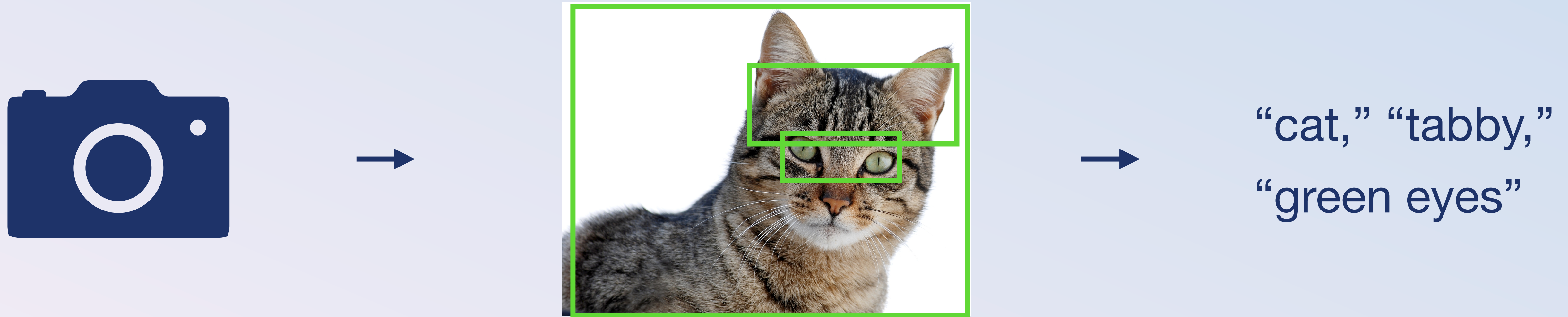
Chart



Model

“bar chart,”
“trend up”

What is the ideal information flow for a visualization?



What is the ideal information flow for a visualization?

Using the ground truth *and* the visualization!

