



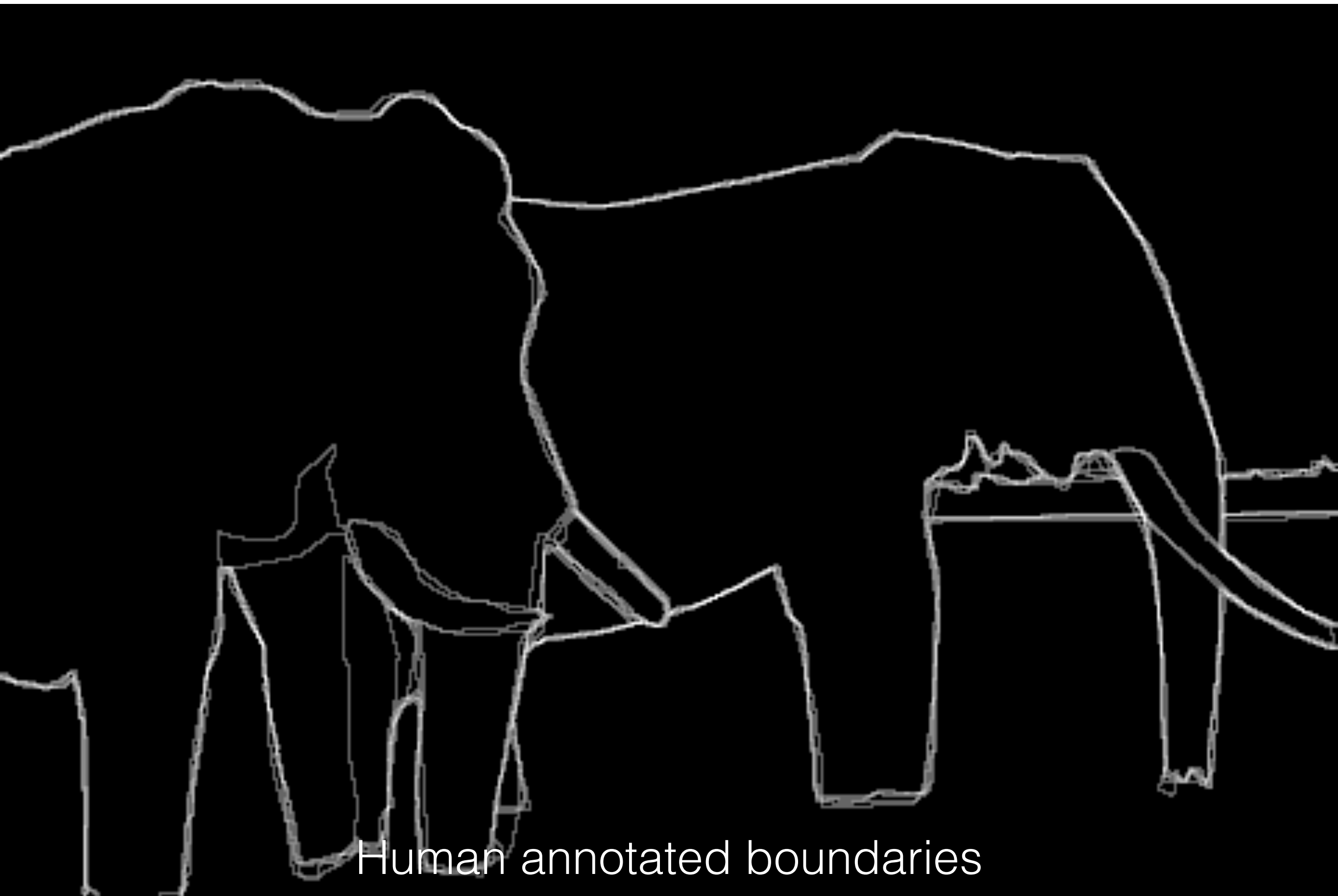
Defining boundaries

Computer Vision

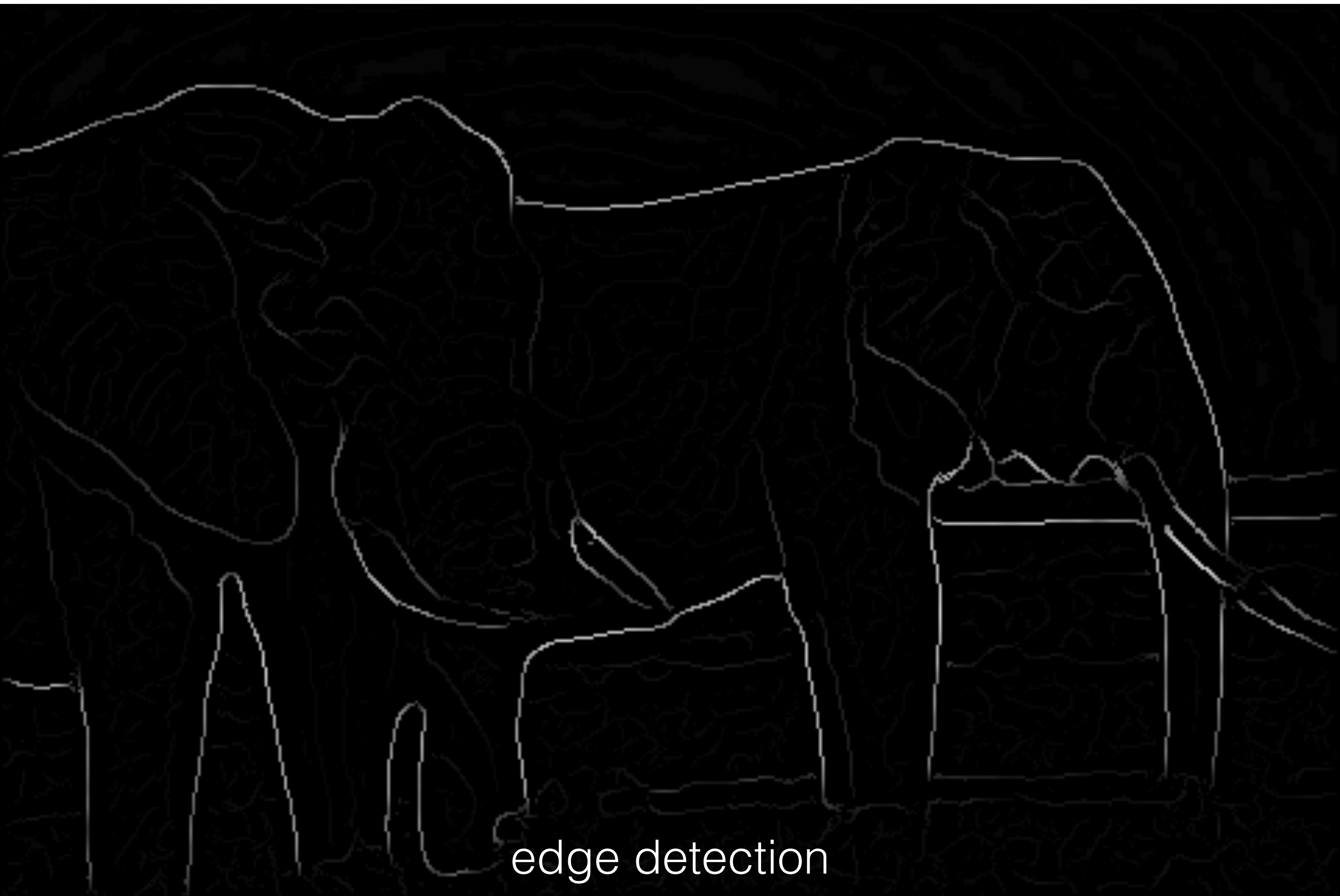
Carnegie Mellon University (Kris Kitani)

Where are the object boundaries?

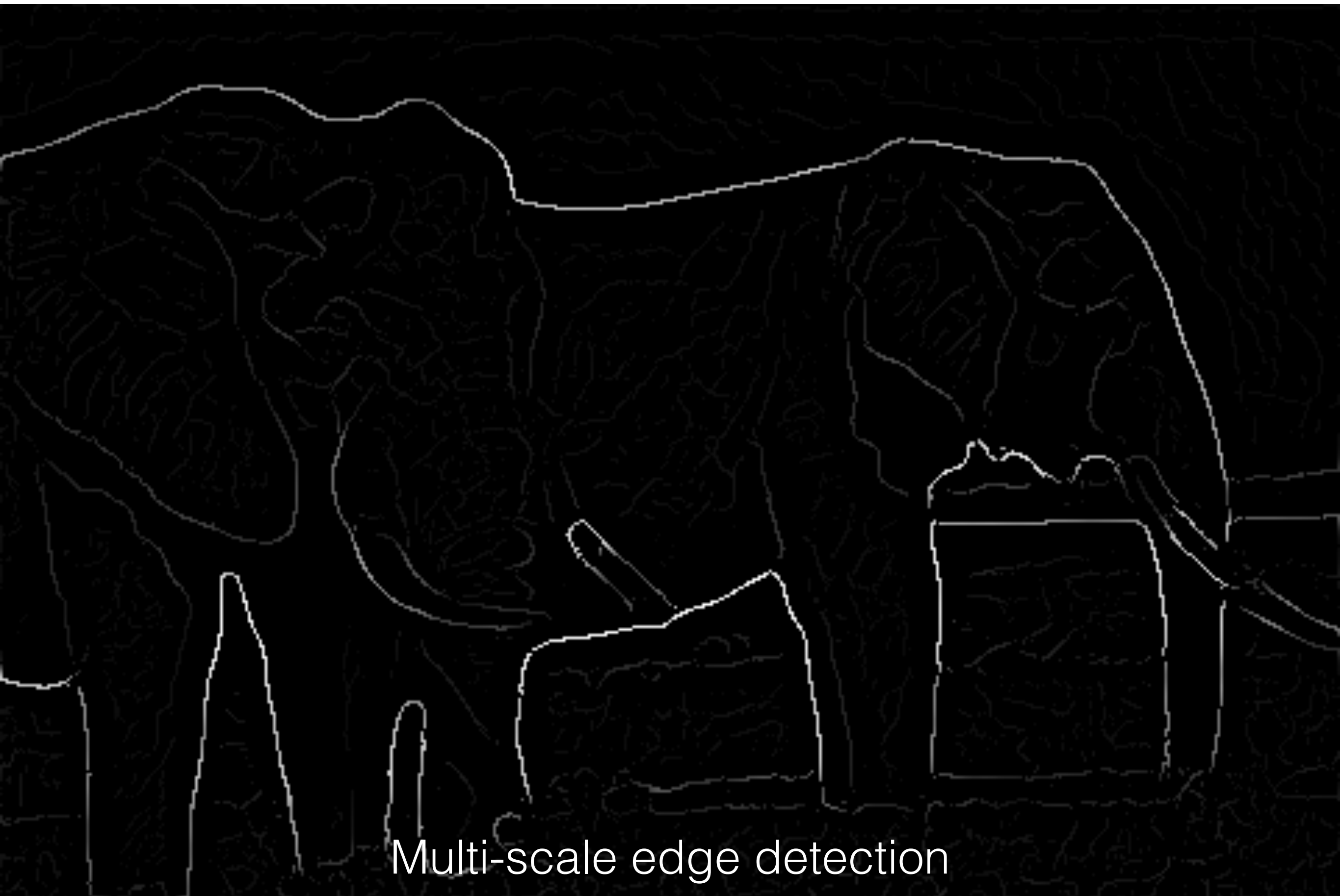




Human annotated boundaries



edge detection



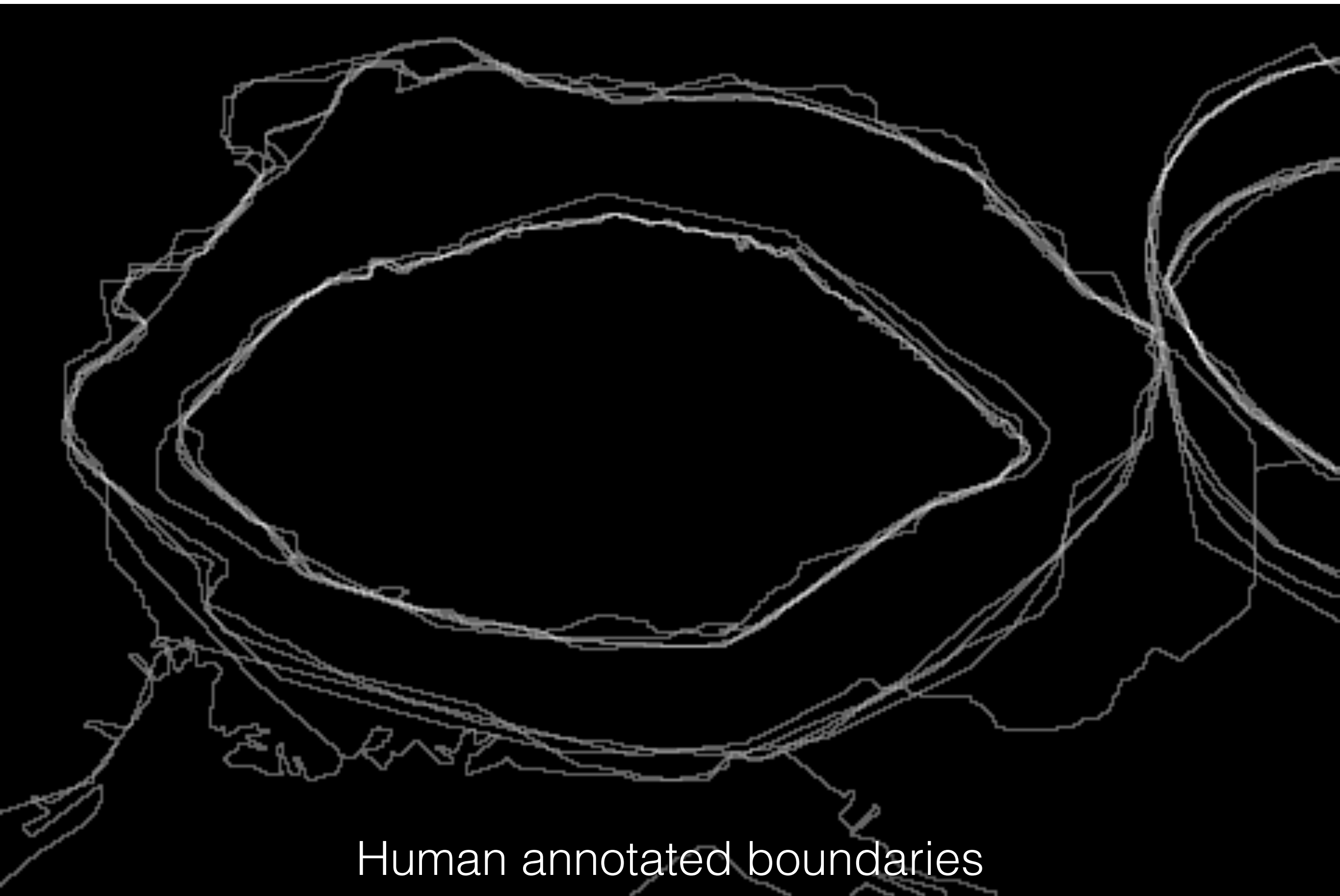
Multi-scale edge detection

The image shows a grayscale edge detection of a scene. A person is visible on the left, and a rectangular box is on the right. The edges are highlighted in white against a black background. The text is centered over the image.

Edge strength does not necessarily
correspond to our perception of boundaries

Where are the object boundaries?





Human annotated boundaries



edge detection

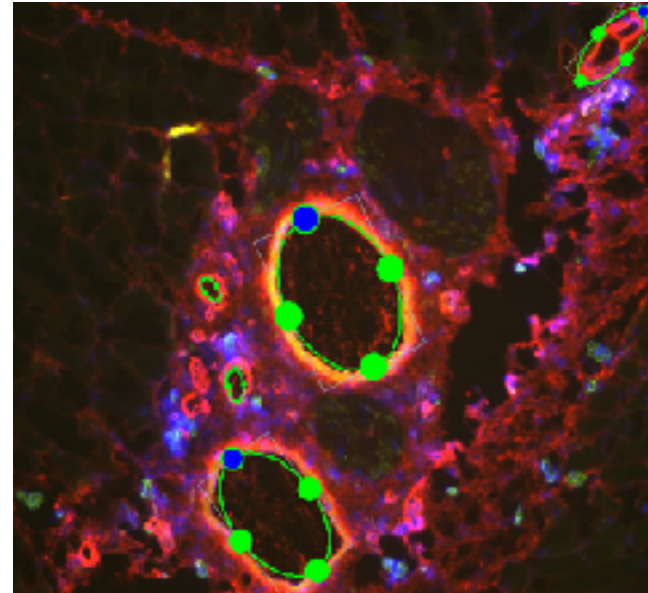
A close-up photograph of a sea anemone with many tentacles, resting on a red, textured surface. The anemone has a central mouth-like opening and numerous long, thin tentacles radiating outwards. The background is a dense, red, and somewhat mottled surface, possibly a piece of coral or a rock covered in algae. The text "Defining boundaries are hard for us too" is overlaid in white, sans-serif font in the center of the image.

Defining boundaries are hard for us too

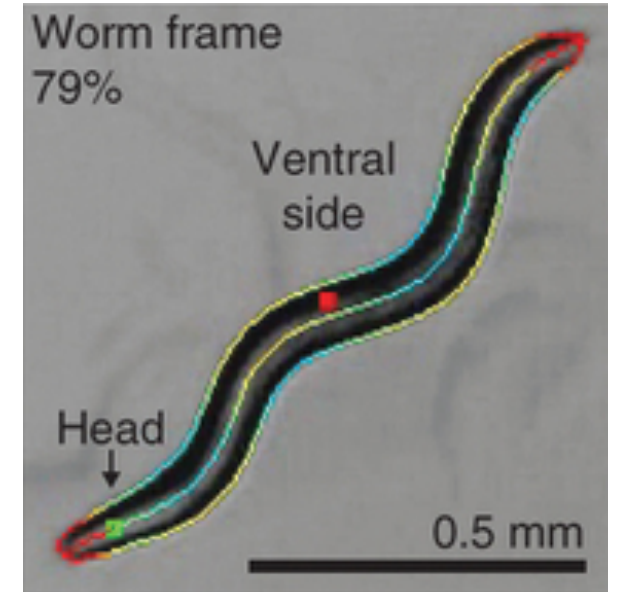
Applications



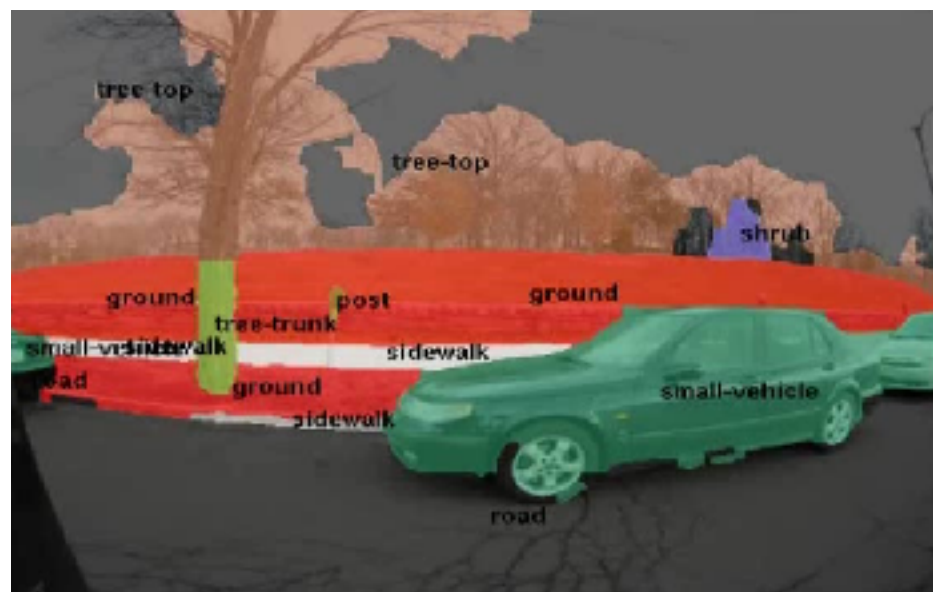
Autonomous Vehicles
(lane line detection)



tissue engineering
(blood vessel counting)



behavioral genetics
(earthworm contours)



Autonomous Vehicles
(semantic scene segmentation)



Computational Photography
(image inpainting)