



# How Does AI Detect Cars?

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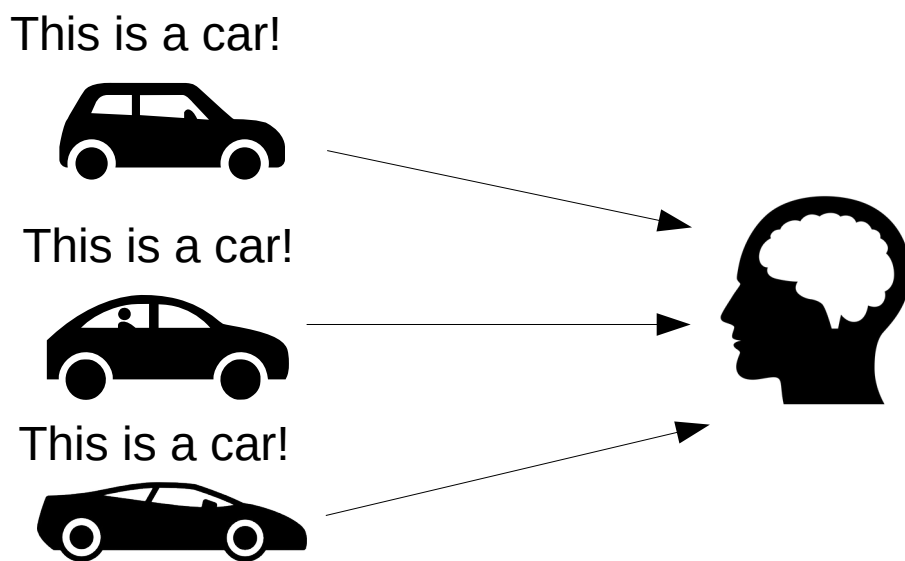
# How Does Human Detect or recognize Cars?

What is this?



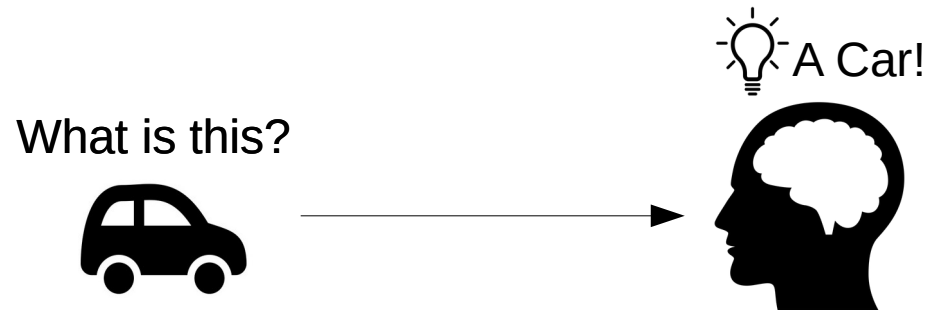
# How Does Human Detect or Recognize Cars?

- Training!
  - Human brain is trained to recognize cars by seeing many cars.



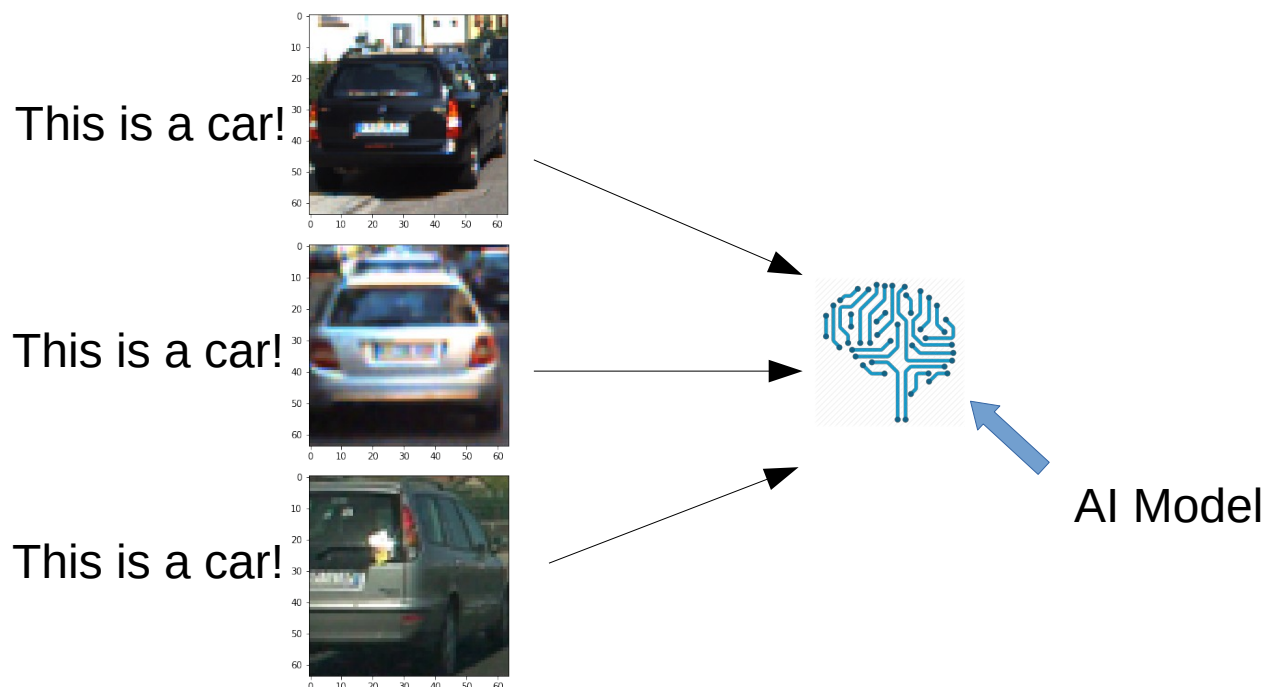
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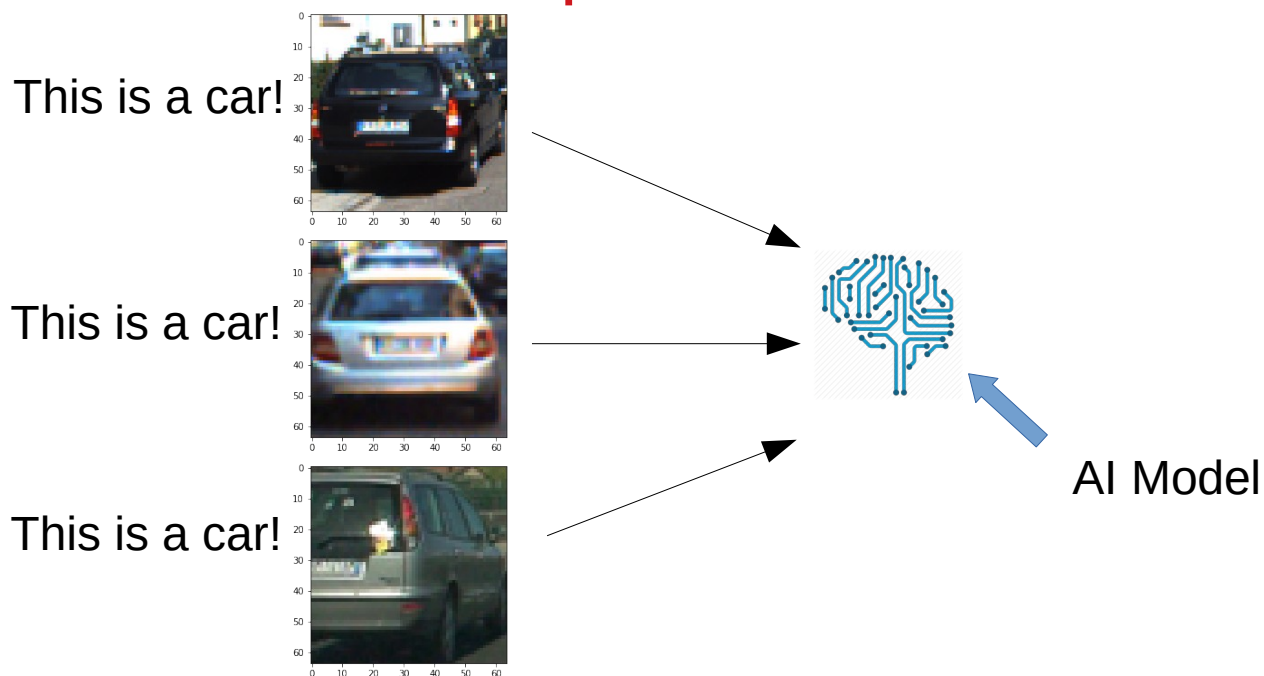
# How Does AI Detect or Recognize Cars?

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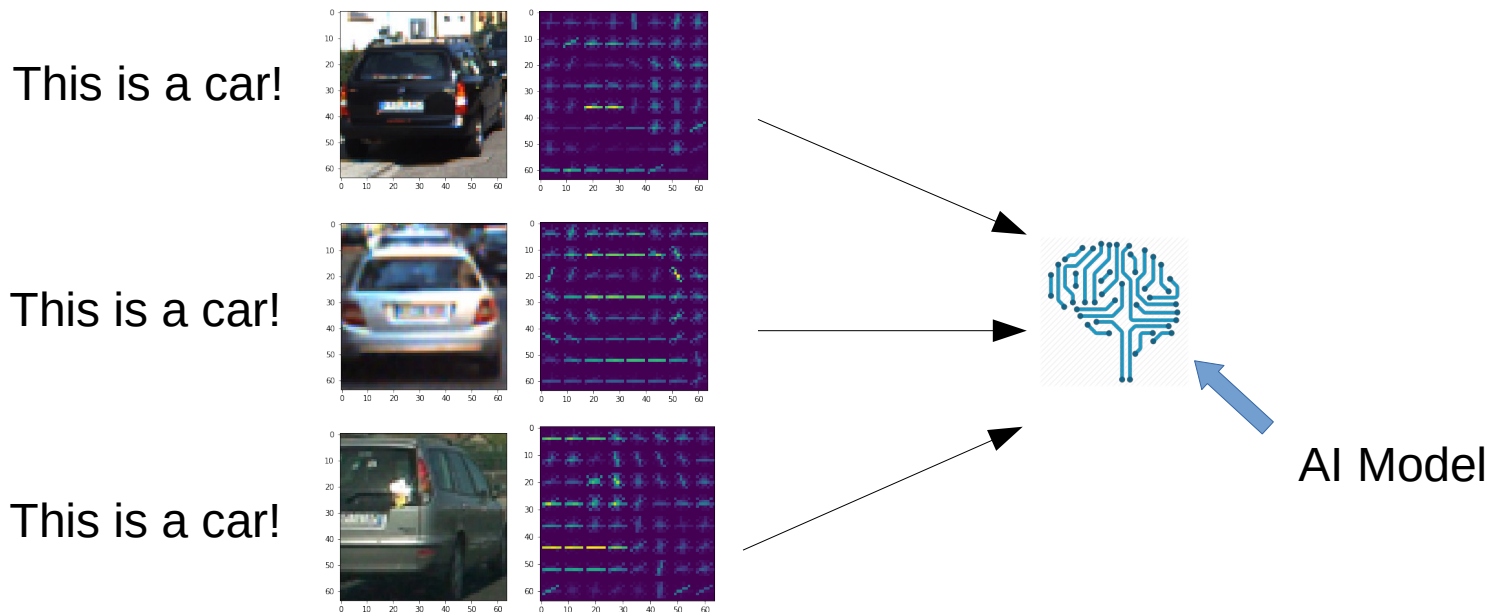
# How Does AI Detect or Recognize Cars?

- Training!
  - An AI Model is trained to recognize cars by seeing many cars. **We Let the AI see thousands of car photos!**



# Actually, Not Photos

- The AI only needs to see the necessary “features” of the car photos.
  - The “features” are the edges of the photos -- hough lines as used in lane detection.





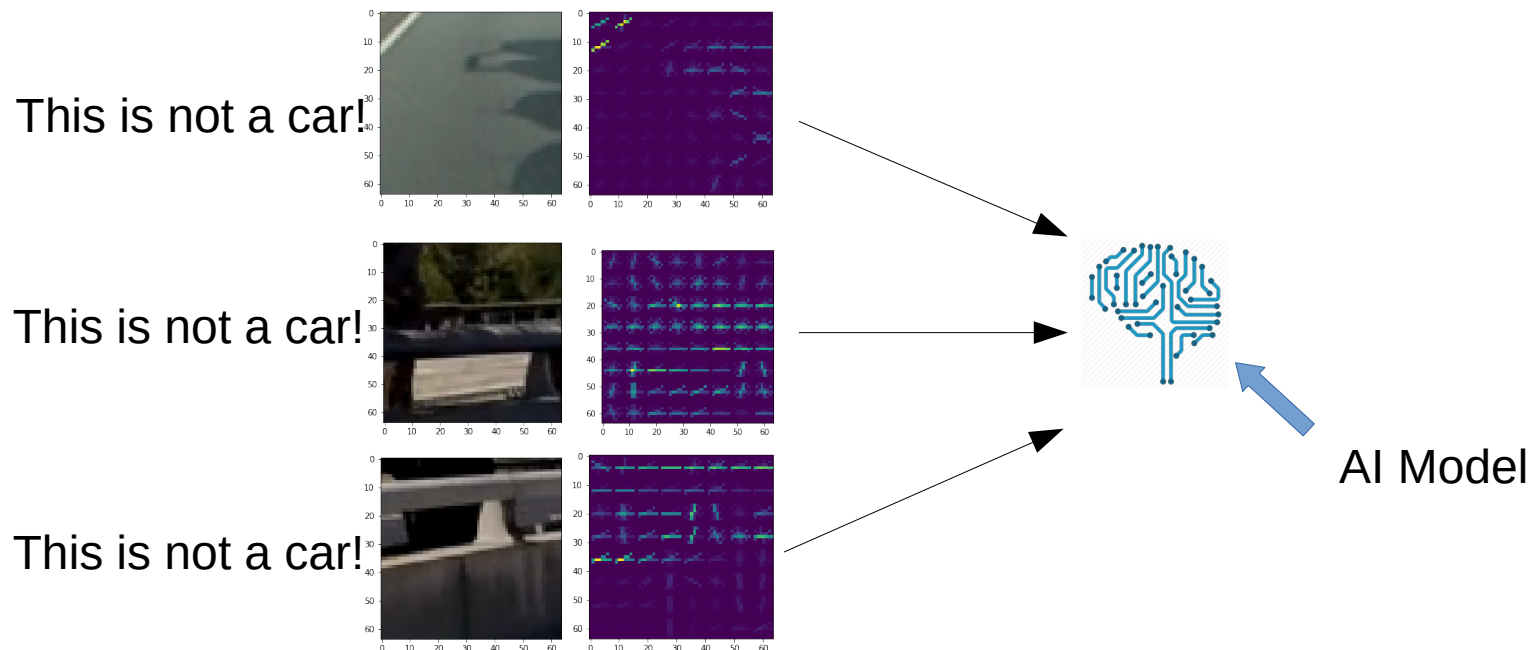
# Also Non-Car Photos

- Human brains know what are non-cars from previous life experience
- Our AI model has not previous life experience, it is like a “blank paper” before
- So we also need to tell our AI model what are not cars



# Training with Non-car Photos

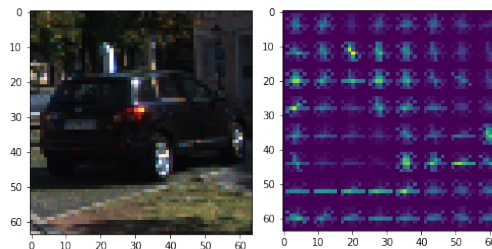
- We do the same thing with non-car photos
  - Thousands of non-car photos
  - Hough lines extracted



# The AI Model for Detecting Cars

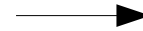
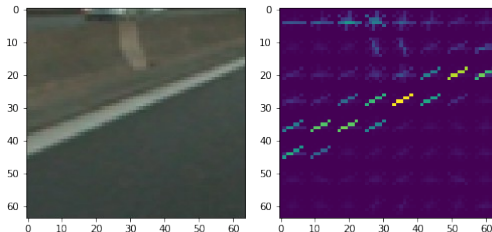
- The model can tell cars from non-cars.

Is this a car?



Yes!

Is this a car?



No!

# What is an AI Model Exactly?

- It is a collection of very very complex math equations
- It can have tens, hundreds, thousands, or even millions of parameters (coefficients)
- The training process determines the values of these parameters (coefficients)

