BACKROUND IMAGE CAN BE AN EXAMPLE OF THE ALREADY ANALYZED BLACK AND WHITE YOLOv7 IMAGES WE CREATED

YOLOvCAPY

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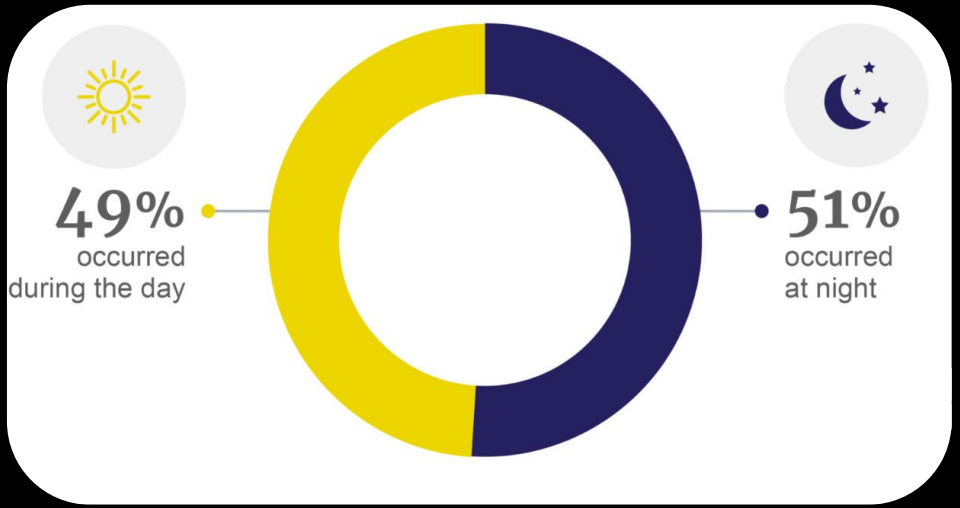
Nighttime driving

- ½ of traffic fatalities occur at night while only ¼ of travel occurs after dark
- Why
  - Drunk driving
  - Fatigue
  - **Impared vision**



Thermal Cameras

Research Question

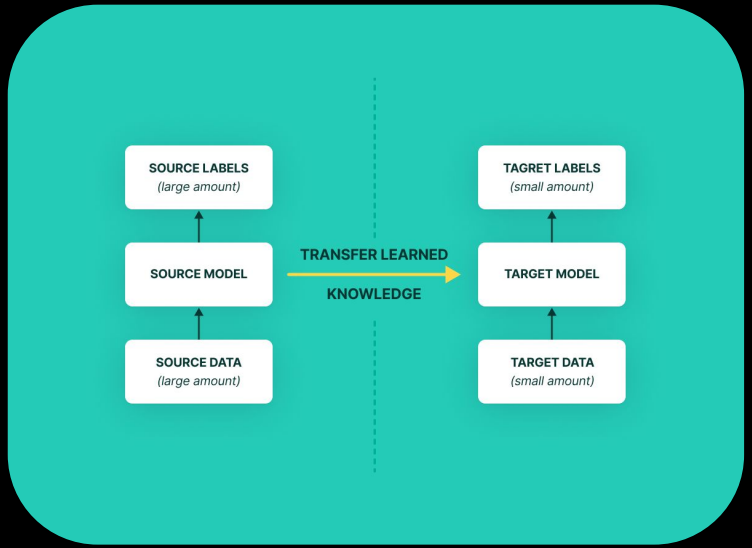
Can we create an AI model such that it is able to effectively detect objects at night using pictures that look like or are thermal images?

Database

- Teledyne FLIR
  - Color photos and videos and their thermal counterpart at night.
  - Over 26442 frames
  - Subjects from more than 15 categories
    - people, bikes, cars, motorcycles, busses, trains, trucks, traffic lights, fire hydrants, street signs, dogs, skateboards, strollers, scooters

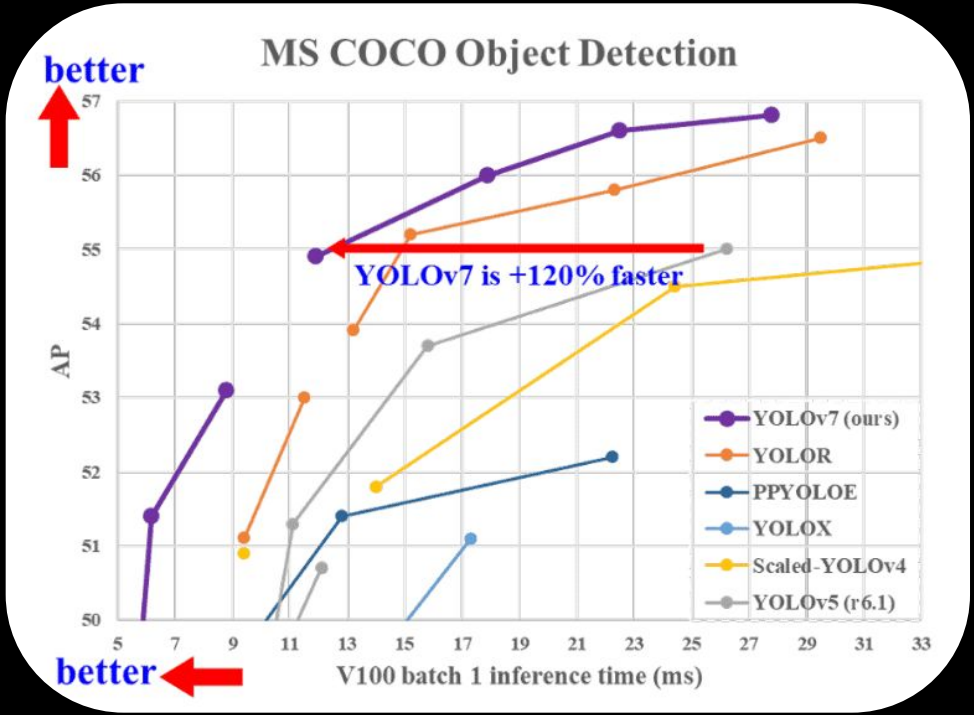
Transfer Learning

- Transfer learning
  - Existing model and train on new dataset
    - Use new weights



YOLOvCAPY

- YOLOv7
  - Most popular open source object detection model
- Train YOLOv7 on FLIR dataset with new weights
  - Computer Analyzed Photos with Yolo



Model

- Diagram of our model and weights and stuff if that's something we can do

Results

- YOLOv7 VS CAPY

Results

- We can do a graph with maybe 1 or two bullet points to the side

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Comparison

- Compare YOLOvCAPY on thermal images to YOLOv7 on night time color images

Relevance

- Ability to employ our model in real world situations
- Benefit of using thermal imaging and the CAPY detection algorithm
- Utilizes already present technologies in automated vehicles

Future Endeavors

- Limits of FLIR dataset
  - General situations included, but not edge cases
- Be able to use the model for more
  - Velocity and motion of objects
  - Distance of objects

References

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