HOV Image Detection

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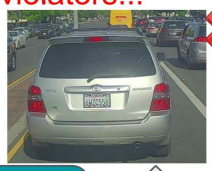
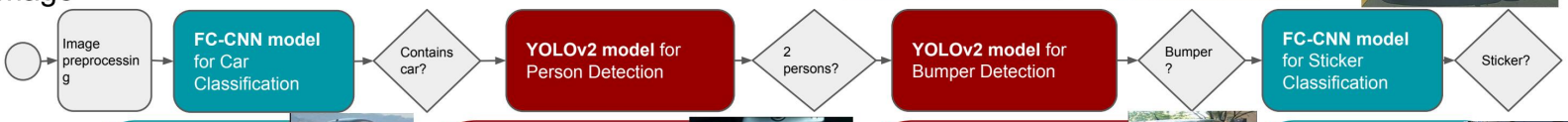
Presentation: https://youtu.be/-PwwZRGBpV0
Source Code: https://github.com/alrightyi/hov

Motivation: Catch HOV-lane violators!!!





Image



FC-CNN Model

Image size: 64x64x3
Batch size: 32
Epochs: 3
Optimizer: Adam
Loss: MSE
Train/Val: 80/20
Accuracy: 99.4%

(pre-trained model with dataset from ImageNet.)

pos images: 56, accuracy: 0.39285714285714285
neg images: 50, accuracy: 0.98
total images: 106, accuracy: 0.6698113207547169

YOLOv2 Model

Image size: 608x608x3
Batch size: 32
Epochs: 30
Optimizer: Adam
Loss: Classification & Coordinates Loss
Non-Max Suppression, IOU boxes

(pre-trained model with dataset from ImageNet.)

YOLOv2 Model

Image size: 416x416x3
Batch size: 32
Epochs: 30
Optimizer: Adam
Train/Val: 90/10
Loss: Classification & Coordinates Loss
Non-Max Suppression, IOU boxes, Early Stopping

Re-trained from YOLOv2 model using YAD2K + modifications.
Dataset from web search, hand-labeled using LabelBox (size: 680)

FC-CNN Model

Image size: 64x64x3
Batch size: 32
Epochs: 3
Optimizer: Adam
Loss: MSE
Train/Val: 80/20
Accuracy: 67%
Dataset size: 1663 (1077 neg, 586 pos.)
Data Augment: flip, shift, rotate, shear, zoom, brightness

(pre-trained model with dataset from ImageNet.)