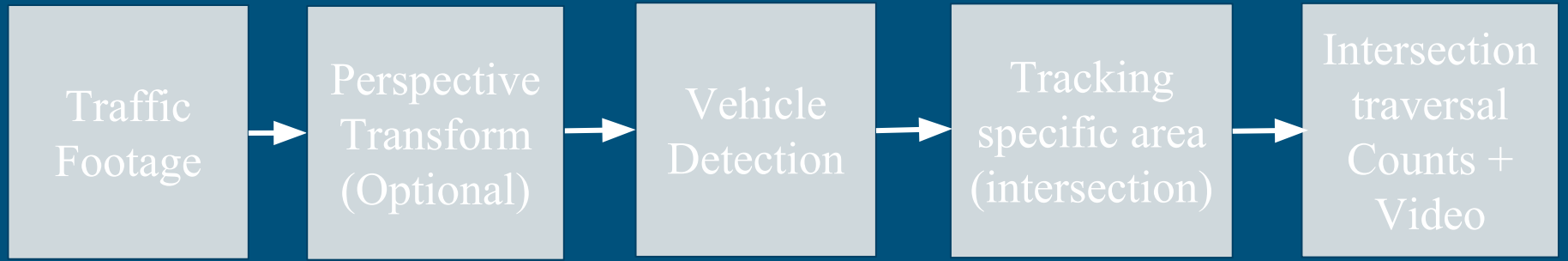
Vehicle Detection and Logging

Shane lckes, Arash Behpour, Jake Pan

Commercial Future

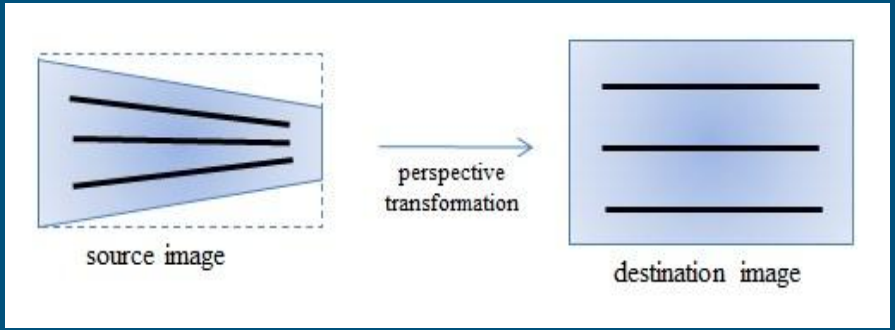
- Honda Thinks Smarter Intersections Can Reduce Auto Accidents And Fatalities

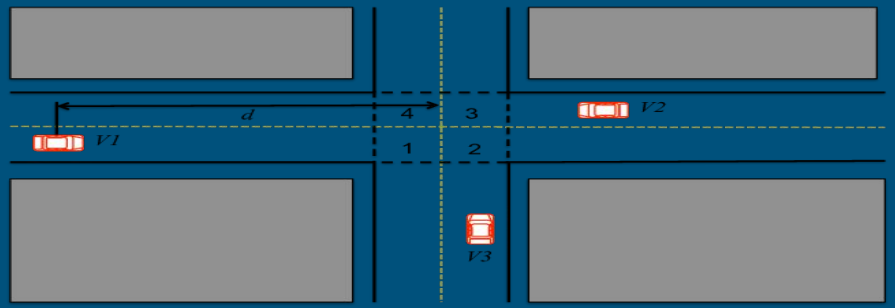
Project Overview



Perspective Transform (Optional)

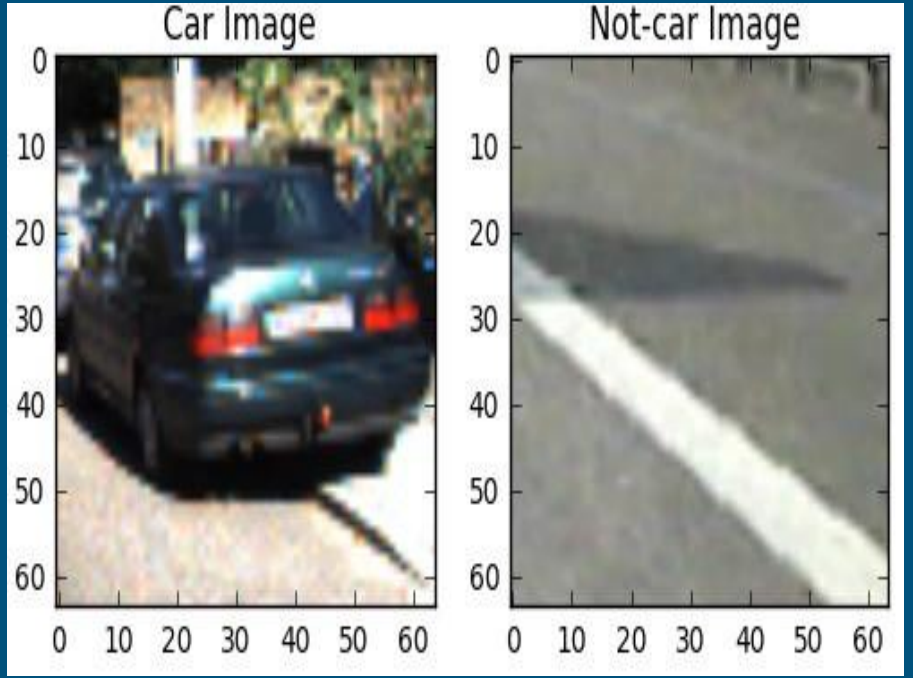
- Our traffic camera viewpoint can be changed to top-down
- Better output visualization





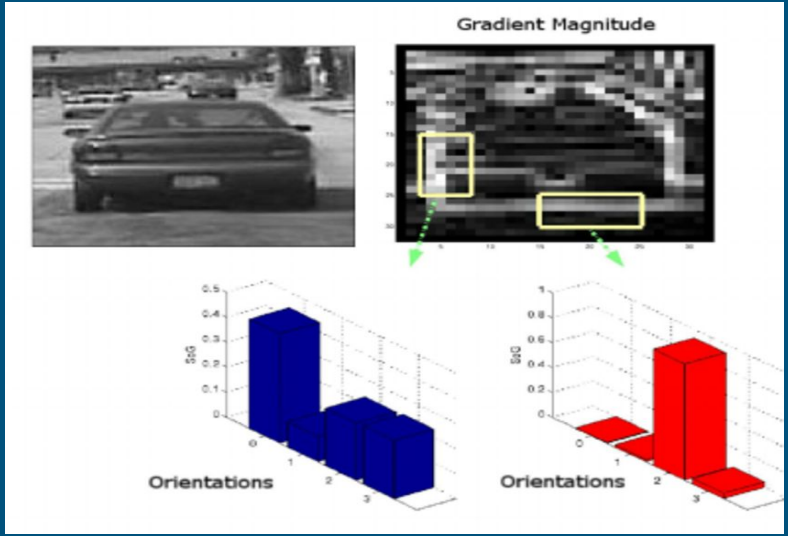
Vehicle Detection

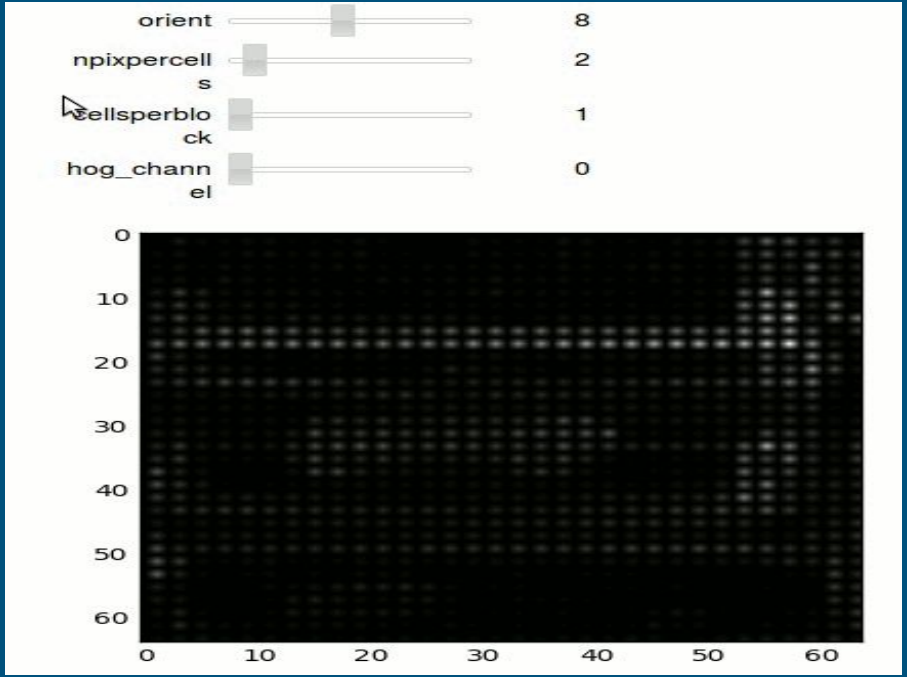
- Two options considered for distinguishing between objects that are vehicles and non-vehicles
- Both require datasets of training images
- Our detection will be angled from a traffic camera position



HOG Approach

- Histogram of Oriented Gradients (HOG) with Sliding window





CNN Approach

- Train a Neural Network
- Collect training images from Google Earth, Google street views
  - The quality of images
  - Sample Requirements
  - Extracting poor features

Expected Inputs and Outputs

- Input: Video of Traffic Intersection
- Outputs:
  - 1) Vehicle object detection/tracking within an intersection
  - 2) Log number of vehicles traveling through intersection

Work Cited

- Levin, D. (2018). *Honda Thinks Smarter Intersections Can Reduce Auto Accidents And Fatalities*. [online] Forbes.com. Available at: https://www.forbes.com/sites/doronlevin/2018/10/08/honda-smart-intersection-a-step-toward-driverless-future-with-fewer-accidents-fatalities/#1ed18dc6c0fa [Accessed 3 Dec. 2018].
- Prevost, L., Clady, X. and Negri, P. (2007). *Benchmarking haar and histograms of oriented gradients features applied to vehicle detection*. In: ICINCO 2007. [online] Universit´e Pierre et Marie Curie, p.diagram. Available at: https://www.researchgate.net/publication/221644952_Benchmarking_haar_and_histograms_of_oriented_gradients_features_applied_to_vehicle_detection [Accessed 3 Dec. 2018].
- Gunzi, A. (2018). *Vehicle Detection and Tracking using Computer Vision.* [online] Chatbots Life. Available at: https://chatbotslife.com/vehicle-detection-and-tracking-using-computer-vision-baea4df65906 [Accessed 3 Dec. 2018].
- Google(2018). *Google Maps*. [online] Available at: https://www.google.com/maps [Accessed 3 Dec. 2018].
- YouTube (user: . (2018). *Vehicle Detection and Tracking, Using Matlab*. [online] Available at: https://www.youtube.com/watch?time_continue=2&v=HYfVASpw8pQ [Accessed 3 Dec. 2018].
- Loomis, J. (2018). *Ortho*. [online] Johnloomis.org. Available at: http://www.johnloomis.org/ece564/notes/tform/planar/html/planar1.html [Accessed 3 Dec. 2018].