



Car Detection Using AdaBoost

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Motivation

- Classification of cars in a video
- Develop and learn AdaBoost from scratch
- Groundwork for multiple object detection

Data

- University of Oxford & Paris

Positive



- Training: 500
- Test: 90

Negative



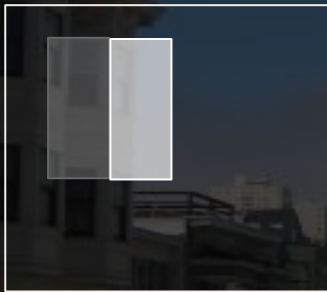
- Training: 500
- Test: 90

Adaboost

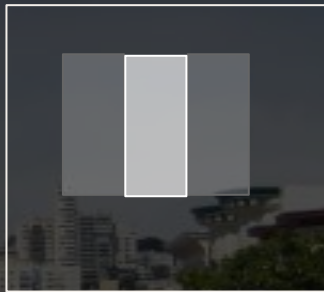
- “Weak classifier” → decision tree stump
- “Strong classifier” formed from ensemble of “weak classifiers”
- Focus on **misclassified** images

Haar Features

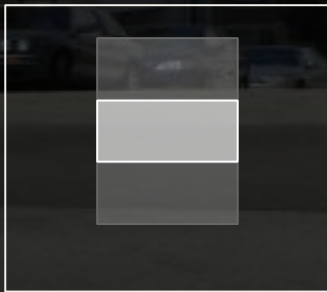
Vertical 2-Rectangle



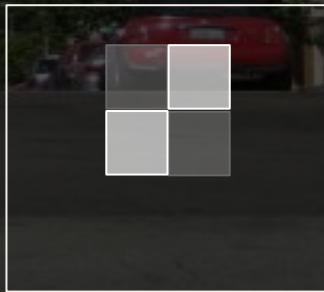
Vertical 3-Rectangle



Horizontal 3-Rectangle



4-Rectangle



Results

- Training Positive Accuracy: 0.995
- Training Negative Accuracy: 0.992
- Testing Accuracy: 0.998

Video



Thanks!

Github:

<https://github.com/USF-ML2/CaptainDataCrunch-.git>

