

Machine Problem 2

CS190-4

1. Vehicle speed tracker

Your task is to automate the speed detection of vehicles passing through a certain part of a highway using a camera. You will use Haar cascade to detect the vehicles; a Haar cascade file is provided.

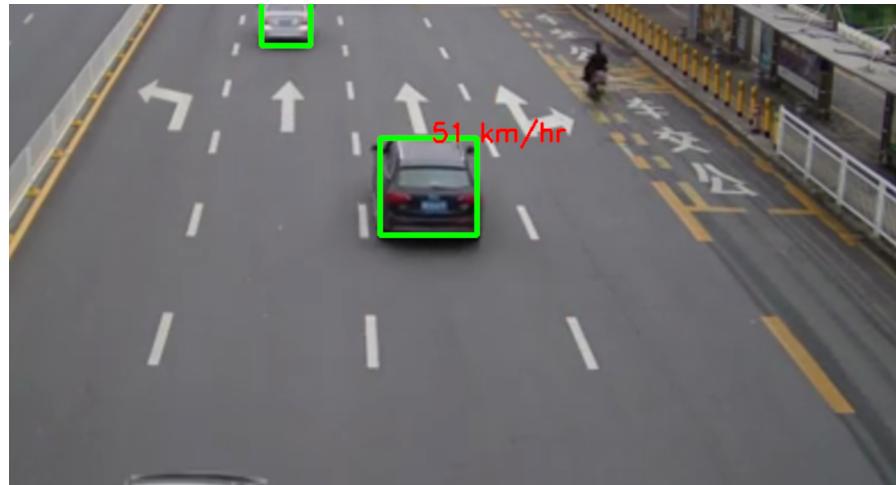
A sample video recording is provided and here is some information that you may find useful in solving this problem:

- a. Pixels per meter = 8.8
- b. Frames per second = 18

Files included:

- a. cars_haar.xml
- b. cars.mp4

Sample output:



*****Use this template for your lab report*****

Machine Problem XX
Course CODE

Name:

Date:

Section:

- I. Problem
 - a. Describe the problem/task/challenge
- II. Methodology
 - a. Discuss here your proposed solution and how you would tackle the problem
 - b. Include necessary diagrams (e.g., flowchart, block diagrams, etc.) of your solution
- III. Results and discussion
 - a. Show/explain the results of your experiment
 - b. Interpret your results, challenges, discuss the limitations, offer recommendations

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Grading rubrics

Methodology (30 points)

- **Proposed Solution (15 points):**
 - **15 points:** The proposed solution is clearly and comprehensively described, demonstrating a strong understanding of the problem.
 - **10 points:** The proposed solution is well-described but has minor missing or unclear details.
 - **5 points:** The proposed solution is present but has significant gaps or is difficult to understand.
 - **0 points:** The proposed solution is vague or missing entirely.
- **Diagrams (15 points):**
 - **15 points:** Necessary diagrams (e.g., flowchart, block diagrams) are accurate, easy to understand, and effectively illustrate the solution.
 - **10 points:** Diagrams are present and helpful but may lack some detail or clarity.
 - **5 points:** Diagrams are present but are difficult to interpret or do not fully represent the process.
 - **0 points:** Diagrams are either absent or fail to accurately represent the process.

Results and Discussion (70 points)

- **Results (35 points):**
 - **35 points:** The results of the experiment are clearly presented and thoroughly explained.
 - **25 points:** The results are clearly presented, but the explanation could be more detailed.
 - **15 points:** The results are presented, but the explanation is confusing or incomplete.
 - **0 points:** The results are poorly presented or missing.
- **Interpretation and Analysis (35 points):**

- **35 points:** The discussion includes insightful interpretations of the results, a detailed analysis of challenges and limitations, and well-supported recommendations.
- **25 points:** The discussion adequately interprets the results and mentions challenges, limitations, and recommendations, but lacks depth.
- **15 points:** The discussion attempts to interpret the results and mention challenges or limitations, but the analysis is superficial.
- **0 points:** The discussion lacks interpretation, or the analysis is inaccurate or irrelevant.