Project 2

The objective of the project is to provide a step-by-step implementation of one the visual tracking algorithms studied in class using python.

You are free to choose a real-world scenario for object tracking. Examples may include tracking a moving vehicle, a bouncing ball, or a person walking, etc.

You are free to consider the following steps:

1. Introduction to the Real-World Problem:
    - Briefly outline the real-world problem, emphasizing its relevance in applications like surveillance or traffic monitoring.
2. Choice of Tracking Algorithm:
    - Explain your choice of tracking algorithm in relation to the example chosen.
3. Step-by-Step Tutorial:
    - Provide a clear and concise step-by-step tutorial for implementing the chosen tracking algorithm in Python, preferably using Jupyter notebooks.
4. Challenges and Possible Improvements:
    - Discuss challenges faced during the implementation, such as handling occlusion or varying lighting conditions.
    - Explore potential improvements or modifications to enhance the algorithm's performance in diverse scenarios.

Documentation:

- Students are required to maintain a Jupyter notebook documenting their code, explanations, and any challenges faced during the implementation.

Presentation:

- A video presentation (around 10 min) is encouraged where students explain their code, showcase the tracking algorithm in action, and discuss any lessons learned or potential improvements.

Project Deliverables:

- Completed Jupyter notebook (65%)
- Video presentation (35%)

Examples:

Robot localization using python:

- Video: https://www.youtube.com/watch?v=rwzzEhqkt6c
- Notebook: https://colab.research.google.com/drive/1AoGZAFa_8mG1jQAniV1q8bGZsMQnErzl?usp=sharing

Robot localization using Matlab:

- Notebook: https://es.mathworks.com/help/nav/ug/localize-turtlebot-using-monte-carlo-localization.html
- Video: https://www.youtube.com/watch?v=NrzmH_yerBU