Car driving segmentation

Objective :

Segment cars and humans in a given picture.

Mission statement :

- Use the provided dataset to segment.
- Define your modelisation strategy.
- Use the framework of your choice (only one framework allowed).

Suggested Dataset :

- Cityscapes Image Pairs
- Cityscapes Documentation

Ressources:

- Potentially useful libraries:
  - Image Segmentation Keras
  - Segmentation models
  - skyimage: segmentation
  - PixelLib
- Blogs:
  - A detailed example of how to use data generators with Keras
  - A Beginner's guide to Deep Learning based Semantic Segmentation using Keras
  - Image Segmentation using Python's scikit-image module
- Notebooks:
  - Pet 🐕 U-Net Image Segmentation

    - Car Driving Segmentation | UNET from scratch
- Youtube videos:
    - Explanation of the concept of image segmentation by Shree Nayar (Columbia University)
    - Python Image Segmentation Tutorial (2022) (without ML algorithm)
    - Instance Segmentation using Mask-RCNN with PixelLib and Python

Livrables :

- **A notebook** (html or ipynb)
- **BONUS: Experiment tracker:**
    - Implement an experiment tracker such as MLFlow.
    - Submit a public link toward the dashboard summarizing your experiment or a screenshot of the dashboard.

Evaluation criterias (100 pts) :

Skill	Description	Points
Documentation (markdown)	• Your strategy is explained. • Your code is commented when needed. • The model selection and hyperparameters selection is explained. • The performances are commented on. • Bibliographical references are present.	30
Code (python)	• All blocks necessary to implement your strategy are present. • Specialized libraries have been used. • All notebook cells have been executed successfully sequentially.	30
Performances	• A baseline is defined. • More than one model is tested. • All necessary comparisons are done. • Figures are readable and legends are present. • A proper evaluation metric was selected.	40
Bonus	• The dashboard is submitted.	10