PRELIGENS

Pioneering AI technology for a safer world

Junior Computer vision engineer challenge

Part I System design and architecture (30min-1h):

For this section, you are not required to write any code. Instead, we aim to gauge your understanding of computer vision and robotics principles through a series of questions. Your responses should reflect your ability to conceptualize and design systems, identify potential challenges, and propose innovative solutions.

- Discuss a few strategies for implementing a embeded AI for objectf detection on full motion video from UAV

- What are the challenges for optimizing such a system on an embedded platform? Do you recommend specific stacks, hardware or technology and why?

- What factors could impact the quality of the algorithm? How would you mitigate such risk?

Part II: Engineering and code (~2-4h)

In this section you'll be asked to give an example of code and implement some algorithm. Your result can be provided as a Github or any way you find suitable to provide technical material.

- Select an off the shelf neural network that could work on a small portable platform of your choice (Mobile, Jetson…) and implement an inference routine for this algorithm that could be a base for a deployed product. The routine should be able to take a video on input and démonstrate real time capability while being relatively portable.

- Implement a testing data of this algorithm on available data

- Provide some performances and metric in terms of resources needed and frugality of your system

To do this you'll need to find some data and code online via various open source videos, geo images and repo that are available. Kaggle or github are natural resources for you. Select data and code that are relevant to you and seem well coded, in the end you are responsible for what you provide so be careful of what you select.

This is not a scholar exercise, the goal is for you to demonstrate your professional capabilities, so feel free to use any tool or ressources you may need, including LLM.

Presentation and communication of your results are a very important part of your work, you will have 1h to present, be sure to prepare your talking point, to keep enough time for questions and share your work in advance so we can prepare our questions.

Thank you and good luck