Machine Learning Engineer Test Task

Many photographers have been taking images of birds and wondering what kind of bird it actually is. A bunch of data scientists have been working on a model to help them out. While the [model](#) is performing well a lot of corners were cut to get this model to production and the service could certainly use some love.

Your task is to implement a service that receives an image of a bird and returns the top 3 results from the model's output per image. Model and data have to be fetched online (instead of downloading it to your local machine). We would like you to:

- Improve service architecture
- Improve service performance
- Make the service maintainable, extendable and testable
- Implement logging and model monitoring making sure to monitor relevant metrics for the use case.
- Add a Model Registry to store the model. Feel free to reuse model registries out in the wild like Mlflow or implement a simple one yourself.

You can change all parts of the code as you see fit, however, you are not expected to work on ML model performance. We will evaluate code quality and latency.

One day in advance of the presentation we expect you to:
- Submit your code via a Github/Gitlab repository shared with @msemelman-vrff
- Prepare a report exploring the execution times of your inference implementation
- Prepare some material (preferably slides)

On the day of your presentation, you will have 30 minutes to present your solution and there will be 30 minutes for Q&A with the panel.

Bonus

- Unit tests with Mocked images and model data (able to run offline)
- Analyse the bottlenecks in your implementation, and report options for improving upon them.
- Make use of Docker or Kubernetes for the infrastructure layer. Propose a scalable configuration (ie: adding machines should reduce latency)

Local setup

1. Install Python 3
2. Install requirements `pip install -r requirements.txt` [1]
3. Run the code `python classifier.py

The model: The sample model is taken from Tensorflow Hub:
https://tfhub.dev/google/aiy/vision/classifier/birds_V1/1
The labels for model outputs can be found here:
https://www.gstatic.com/aihub/tfhub/labelmaps/aiy_birds_V1_labelmap.csv
The model has been verified to run with TensorFlow 2.

[1] If using the Apple M1 chip please contact interviewers for more information.