Dear [Candidate],

Thank you for your continued interest in Leonardo. As some final steps in the interview process, we have created this coding challenge to assess your individual coding skills.

The take home coding challenge is expected to take a few hours to complete.

Provided in this email you will find a zip file containing an assorted collection of images, and a text file containing a list of model names. These model names correspond to StableDiffusion image generation models hosted on the HuggingFace website, and can be accessed using the diffusers python library. These models can perform a number of tasks including text2img generation, img2img, and inpainting.

We ask that you develop some code to perform the following:

* Load the provided images from disk
* For each image, select a random model from the provided text file
* Perform img2img generation for each image
* Record any important metrics (e.g, time, memory) for your algorithm and store these metrics in a text file

Please return your submission by responding to this email with an attached zip file containing only your code (python .py files) and a README.md file discussing your design considerations. The README file should be a short description of your code and design choices. Your code will be assessed based on the readability, comments and design considerations. Although we provide only a handful of images and models for testing, consider how your code would scale to thousands of images or models.

This challenge is purposefully open-ended, and you are free to make any design decisions. The specific parameters of the img2img generation are not important (prompt, strength, steps, guidance scale) and the resulting images will not be assessed. Please document any design considerations as comments where appropriate and in the README file.

It is expected that you may not be familiar with the diffusers python library. There are plenty of resources available online to facilitate the use of this module. The use of this library can be constrained to the loading of models. The use of additional libraries and dependencies is permitted.

The use of diffusion models for image generation typically requires GPU utilisation. If you do not have access to a sufficient GPU in your development environment, we encourage the use of Google Colab which provides GPU access for free for 12 hours per account. However, please return your final code submission as one or more .py files.

If you choose to use Google Colab:

* You may need to set the Runtime type to GPU
* To install the required libraries within Colab, the following line can be used:
  + !pip install -q diffusers==0.14.0 transformers xformers git+<https://github.com/huggingface/accelerate.git>
* Files uploaded to Google Colab can be accessed from “/content/path/to/images”

Kind regards,

Leo