Abstract

Hiring Assignment

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About this Document

Congratulations to getting this far in our hiring process. We appreciate your willingness to complete an assignment as part of your hiring process. This document details your task assignment process as well as additional information regarding the work that you're completing under the assignment.

Assignment

Start and Duration

The available time for the assignment is two days with up to 8hrs per day, the results should be delivered by noon on the third day.

Complexity and Scope

The assignment is complex, and you are not expected to finish 100% of it. However, it is important for us to understand how you can solve a medium-sized assignment in a self-organized manner and how far you will get with the task in the given timeframe. Keep in mind that function, code quality as well as code-level documentation will be reviewed.

Working on the Assignment

This document is stored in a GIT repository (the "*Assignment Repository*"). While working on the assignment, you're expected to regularly commit changes to the Assignment Repository. We expect code commits in one- or two-hour intervals.

Hand-off

Your work needs to be handed over to your HR manager before noon on the third day in your local time. The Assignment Repository should be zipped and handed over to by sending it to HR@TheAbstract.co as an attachment or downloadable URL.

Ownership

It is very important to understand that the ownership of any code created as part of this assignment will remain your intellectual property. We will only use your code to evaluate your technical fitness for the role you're applying for. The data you've sent to us will be destroyed within five (5) business days upon receiving the data.

Your Assignments

This section provides a description of your assignments. Please assume that no additional information can be provided, and you are supposed to make decisions as to how to implement or solve some issues on your own account.

Computer Scientist (AI Research, C++)

Your task is to build a C++ executable that is executing an AI network, leveraging modern C++11 and CMake for the project setup. All dependencies must be part of the repository or self-installing through CMake. The code should be portable between Windows, Linux and MacOS and will be reviewed for functionality on at least two platforms. Note: We're currently using the Tensor Flow C API wrapped in a C++ library for our in-house developments. In our C++ library we typically load a GraphDef file created in Python and execute this Graph in our library.

Your task is to develop a compact Deep Convolutional Generative Adversarial Network (DCGAN). The DCGAN that is to be implemented as a standalone C++ library should have two modes of operation:

1.) to train a network for a predefined number of epochs on an image set and write the output network to disk
    a. The output image of each epoch, should be written to disk as an image.
2.) to execute a pretrained network to generate a new image.

Images generated by a pretrained network should be plausible with the discriminator doing a quality rejections of implausible images by the generator.

A recommended approach for this task is to build the network in Python and once implemented, move to C++.