

Job Description - Deep Learning Engineer (Intern)

Requirements •

Personality:

- We are looking for candidates who want to straddle that thin line between cutting edge research and real world applications.
- Curiosity is key. If you find yourself keeping up with the latest cutting edge work purely out of interest and passion, then you are exactly who we're looking for!
- Ideal Profile (3rd/4th year Bachelors, 2nd year Masters students):
 - Has experience with downloading and running open source deep learning projects.
 - Has gone through PyTorch and/or TensorFlow tutorial code.
 - Has some experience with Linux shell scripting, setting up conda environments, and using ssh/scp.
 - Can debug and solve conflicting package requirements for a piece of Deep Learning code to run.
E.g. Error shown: Dimension mismatch. Actual problem: Default behaviour for nn.Maxpool2d has changed in pytorch from version 0.6.
Solution: Replace all maxpools in the code to match new behaviour.
 - (Bonus) Has experience with setting up C/C++ packages using CMake (e.g. building caffe from source).
 - (Bonus) Has contributed to an open source project.
- Selection Criteria
 - You can attempt the problem given at the end of this document. This will give you an idea of what we deal with on a day to day basis, and how you will be contributing. :-)

Why this may be exciting for you:

- We work in a niche sector, where we apply ML and Deep Learning solutions to problems in the Fashion Industry.
- You will be exposed to cutting edge algorithms, implementing/understanding recent research papers and innovating using abstract reasoning.
- You will be working with a highly qualified team of researchers and ML experts in helping run translate cutting edge research into real world application

- You will be able to see what life is like in a very early stage rapidly growing funded startup, which is very different from a large and established company.
- From a work satisfaction standpoint, we will encourage you to share your thoughts and opinions related to our codebase and implementation pipeline.
- In short, this is going to be an action-packed learning experience like no other, which may translate into a pre-placement job offer too.

Problem Statement:

A large part of our work is to understand 2D scenes in a 3D sense. In particular, given a photo of a human, we fit a 3D mesh to that human. Once the mesh is obtained, we develop algorithms to virtually put clothes onto that mesh. Computer vision researchers call the problem of fitting a 3D mesh to a 2D photo as the “Densepose Estimation” problem. Your task is to deploy existing code onto your local linux machine, and give us densepose estimates for photos that you have clicked, preferably of yourself. The particulars are mentioned below.

- Use this github repository for instructions on deployment:
<https://github.com/facebookresearch/detectron2/tree/main/projects/DensePose>
- Deploy the above code onto your local Linux/Mac machine. Deployment on Windows will not be accepted.
- The existing codebase provides several examples on Google Colab, which you can learn from.
- Once you have deployed the code on your local machine, get a friend to click a photo of you, and run the densepose estimation code on that image.
- In a document, provide the following details:
 - A short description of the procedure you followed to deploy locally. These instructions should be clear enough for a decent programmer to understand.
 - The original photo of yourself.
 - Your photo with the chart-based densepose estimate superimposed. See the above link for examples.
 - A screenshot of the terminal where you run the python code on your image.
- Please send a pdf copy of your response zipped along with the images using the google form given below.
- If we are convinced that the steps you followed are correct, we will provide you with some images of ours to run the densepose estimates on. You will have to run your code with screen sharing on, during a Google Meet call with us.

