**Procedure: Head Pose Estimation**

In this experiment, you will implement head pose estimation application on the Atlas200 DK.

This method first detects a face located in the given input image and then uses the cropped region of the detected face as the input to the head pose estimation model. The head pose of a person is calculated in terms of 3 angles: *yaw*, *pitch* and *roll* in an image. Detailed steps, and explanations are provided in this guide, so you can understand how to build the app step by step. Figure 1 below shows the building blocks of the application pipeline.



Fig 1. Head Pose Estimation pipeline

The code for this project is available as a GitHub repository. You will first log in to the board, then download the repository to the board and finally run the experiments for the input image step-by-step.

1. Download Code and Models:

Github link

1. Complete the lines of code in the script*‘head\_pose\_estimation.py’.*

Fill in the missing lines of code, according to the instruction provided in comments. Make sure you fill in the line of code below the following comment, wherever it occurs in the script:

**### Your code here, one line ###**

You may refer to the sample code in the image classification project, to learn how to use the required APIs in the code.

Image classification: <https://github.com/Atlas200dk/sample_image_classification_c73_python>

1. To run the application, open up a terminal and navigate to the project folder:

**cd head\_pose\_estimation/src**

Run the python script:

**python3 head\_pose\_estimation.py**

1. Run the experiment with other sample image files included in the repo, and verify the outputs. You may replace the input image (path to input image file given in variable ‘*img\_file’*) to see what the outcome is for a variety of head poses. The inferred head pose will be output to the terminal. The detected face keypoints will also be plotted on the input image, you can see the resultant image in the ‘out’ folder.

Note: You can find the completed script here for final reference:

<https://github.com/Ascend-Huawei/OfflineModelSamples/tree/main/head_pose_estimation>