1. **gender\_deploy.prototxt**

* This is a Caffe model architecture definition file
* Defines a CNN (Convolutional Neural Network) for gender classification
* Has 8 main layers including convolution, pooling, and fully connected layers
* Final output layer has 2 classes (Male/Female)
* Input size is 227x227x3 (RGB image)

2. **yolov3.cfg**

* Configuration file for YOLOv3 (You Only Look Once) object detection model
* Defines a deep neural network architecture with:
  + 106 layers in total
  + Multiple YOLO detection layers at different scales
  + Designed to detect 80 different object classes
  + Input size is 608x608x3
  + Uses anchor boxes and feature pyramids for better detection at different scales

3. **coco.names**

* Contains the 80 class names for the COCO dataset
* Used by YOLO to label detected objects
* Common objects include:
* People
* Vehicles (car, bus, bike)
* Animals (dog, cat, bird)
* Everyday objects (bottle, chair, phone)
* Each line corresponds to an index used by the YOLO model for classification

These files work together in your application:

* YOLO uses yolov3.cfg and coco.names for object detection
* The gender classifier uses gender\_deploy.prototxt for face gender classification
* Both models run simultaneously on the video feed

4. **gender\_net.caffemodel**

* Pre-trained model weights for gender classification
* Trained on Adience dataset (containing ~26K face images)
* File size: ~2.3MB
* Works with gender\_deploy.prototxt architecture
* Binary classification (Male/Female)
* Accuracy: ~90% on frontal faces
* Download from: https://github.com/GilLevi/AgeGenderDeepLearning

5. **yolov3.weights**

* Pre-trained weights for YOLOv3 object detection
* Trained on COCO dataset (330K images)
* File size: ~237MB
* Works with yolov3.cfg architecture
* Can detect 80 different object classes
* Accuracy: ~57.9 mAP (mean Average Precision) at IOU=0.5
* Download from: https://pjreddie.com/darknet/yolo/

Important Notes:

* Both files contain the learned parameters (weights and biases) for their respective neural networks
* These files are not included in repositories due to size
* Must be downloaded separately and placed in your project directory
* Make sure versions match between config files and weight files
* Files are binary and cannot be read as text
* Required for model inference but not for training

Steps to setup the project:

**Python Installation:**

1. Download and install Python 3.8+ from https://www.python.org/downloads/
2. Verify installation:

* python –version

**Install Required Python Packages:**

* pip install opencv-python
* pip install numpy
* pip install mediapipe

**Download Model Files**

a) YOLOv3 files:

1. Download YOLOv3 weights (237MB)

wget <https://pjreddie.com/media/files/yolov3.weights>

Or download manually from: <https://pjreddie.com/darknet/yolo/>

1. Download YOLOv3 config

wget <https://raw.githubusercontent.com/pjreddie/darknet/master/cfg/yolov3.cfg>

1. Download COCO names

wget <https://raw.githubusercontent.com/pjreddie/darknet/master/data/coco.names>

b) Gender Classification files:

1. Download from:

* gender\_net.caffemodel: https://github.com/GilLevi/AgeGenderDeepLearning/raw/master/models/gender\_net.caffemodel
* gender\_deploy.prototxt: https://github.com/GilLevi/AgeGenderDeepLearning/raw/master/models/gender\_deploy.prototxt

Remember to:

* Keep model files in the same directory as your Python script
* Ensure webcam permissions are enabled
* Use compatible versions of all packages
* Close other resource-intensive applications while running