A screenshot of a cell phone

Description automatically generated**Flow of activities for 2D & 3D Path and 2D Letter Generation by Classes**

**MainActivity.kt**  
1- Initialize "finalLineCoords" as an empty array.  
2- User presses on "Start Tracking" button.  
3- Trigger "viewBinding.startProcessingButton.setOnClickListener".  
4- Trigger "startProcessingAndRecording()" function.

**VideoProcessor.kt (or yoloDrawing.kt)**  
5- Draw two lines with OpenCV.

**MainActivity.kt**  
6- User presses on "Stop Tracking" button.  
7- Trigger "stopProcessingAndRecording()" function.  
8- Trigger "recieveXYZfromVideoProcessor()" function to fill out "finalLineCoords" array.

**VideoProcessor.kt (or yoloDrawing.kt)**  
9- Trigger "getPostFilterData()" to get X, Y and Z coordinates.

**MainActivity.kt**  
10- Fill out "finalLineCoords" array with X, Y and Z coordinates when "recieveXYZfromVideoProcessor()" is triggered.  
11- Trigger "launch3DOnlyFeature()" feature and send "finalLineCoords" to "OpenGL3DActivity.kt" for rendering.  
12- Additionally sends the filled out "finalLineCoords" array to "yoloLetterPrediction.kt"

**OpenGL3DActivity.kt**  
12- Renders the 3D Path while "yoloLetterPrediction.kt" predicts the letter. (Wait at least 10 seconds to show 3D Path).

**yoloLetterPrediction.kt**  
13- Predict the letter based on X, Y and Z coordinates received from "finalLineCoords" array.  
14- Send the predicted letter to "MainActivity.kt".

**MainActivity.kt**  
15- Trigger "launch2DOnlyFeature()" send the predicted letter to the "OpenGL2DActivity.kt".

**OpenGL2DActivity.kt**  
16- Send the predicted letter to "charGenerator.kt" class to render the specific alphabet".  
17- Based on "charGenerator.kt", the "OpenGL2DActivity.kt" renders the 2D alphabet.

**Classes for 2D & 3D Path and 2D Letter Generation and Inference and their responsibility**

* **yoloDrawing.kt (formerly known as VideoProcessor.kt)** → Detects the light source and generates a 2D Path with OpenCV utilizing YOLO (AI) Model.
* **yoloLetterPrediction.kt** → Detects the path generated by yoloDrawing.kt and predicts the letter or digit.
* **OpenGL3DActivity.kt** → Converts 2D Path generated by "yoloDrawing.kt" into a 3D path and displays with animation while "yoloLetterPrediction.kt" predicts the letter.
* **OpenGL2DActivity.kt** → Generates a 2D Letter based on the prediction of "yoloLetterPrediction.kt".