# Smart Home Surviellence

- Meet Maheshwari (1620BECE30034)
- Priya Mehta (1620BECE30044)

**Guide**

Hitesh Patel

# Breif !dea

- Smart Home Surviellence is a system to detect and identify activites that are going on inside a House/Organisation.

- It is a new and advance method used to replace current CCTV system.

# inspiration

- Majourly in this world, in occurence of any crime, the first step that people do for proof is go through CCTV.
- Be it in Home, on streets or in an organisation.
- This takes upto a lot of time.
- What is a family has a young child at home and he cannot be left unsupervised !?
- Thus role of Smart CCTV comes to place where it can detect the activities and reply to the concern person about the same.

# Technology Used

- Android Jetpack
- Firebase
- TensorFlow

# Why use this technology?

# Android Jetpack

- We have used CameraX API from Android Jetpack to provide seamless analysis and preview.
- It reduces our efforts of coding as compared to the regular camera API
- We've used WorkManager to provide with background process
- We've also used DataBinding and LiveData and Room Database to provide us uninterrupted execution with UI.

# Firebase

- Firebase is a web and mobile platform to provide database, storage, authentication and ML APIs.
- We've used Firebase to put our custom tensorflow model for execution on the cloud.
- It helps us in interacting with the internet and also provides a scope for expansion.

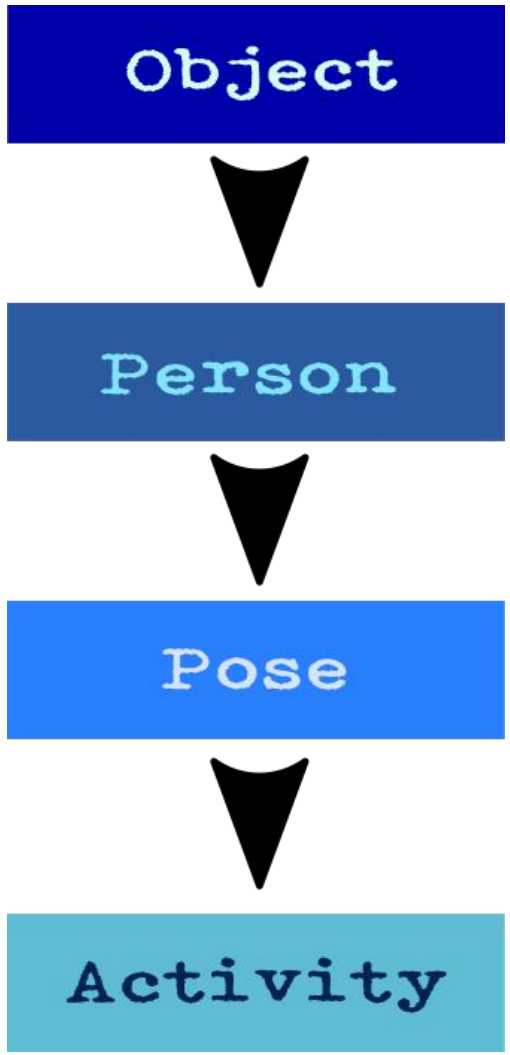
# TensorFlow

- TensorFlow is a free and open-source software library for dataflow and differentiable programming across a range of tasks. It is a symbolic math library, and is also used for machine learning applications such as neural networks.
- We've used TensorFlow to deploy our classification model on the Firebase.

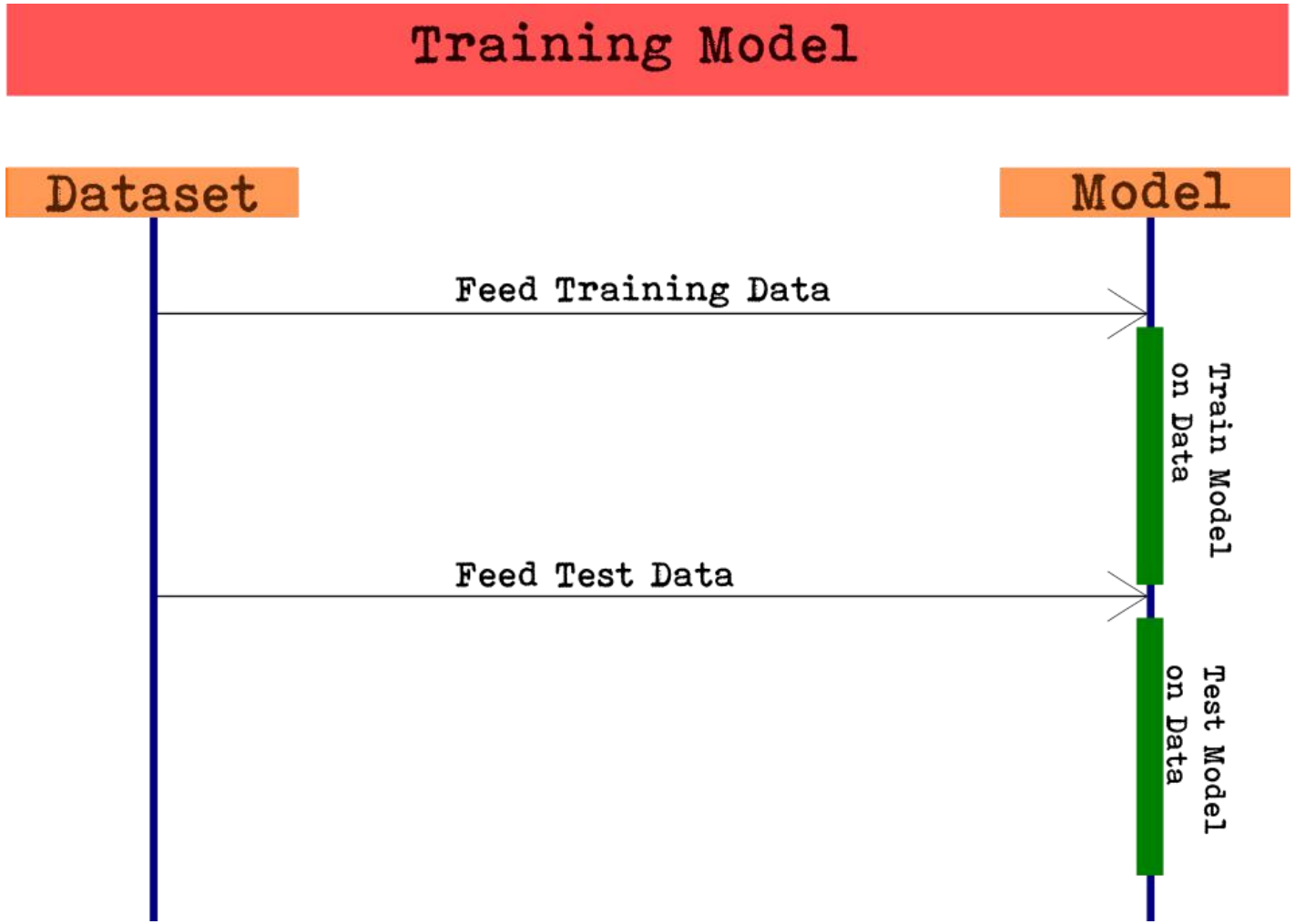

- In this updating world, people never have time to what is going on in their neighbourhood. Some don't even know their neighbours.
- Earlier, all neighbours had an !dea of each other and took care of others belongings in thier absence.
- So we need to such a system to take care of us.
- And why not be SMART !!

# What are we doing?

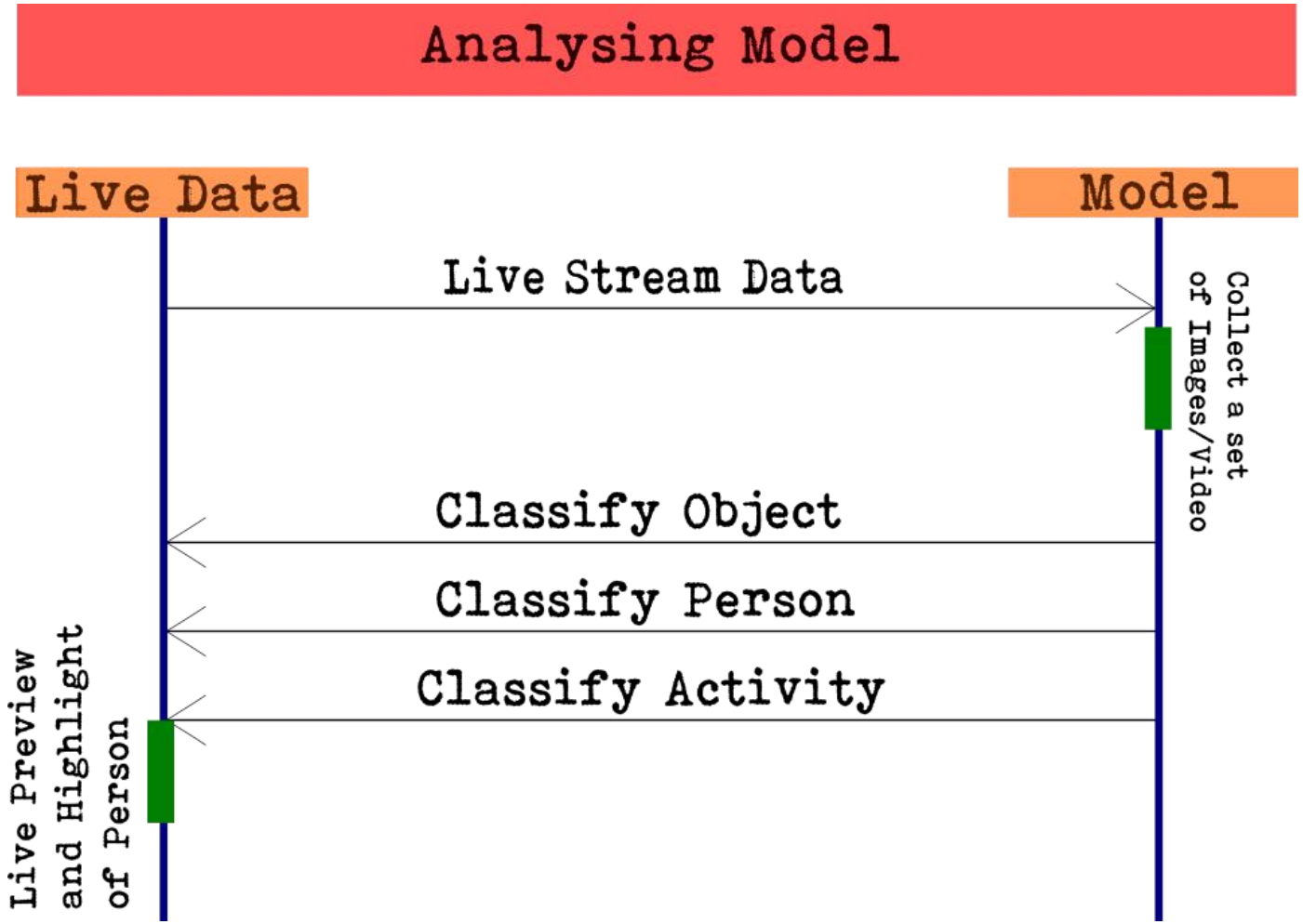
- For an activity detection, first we need to find a pose of a person.
- For pose detection, we first need to find person.
- For a peron detection, first we need to find object.
- For an object detection, first we need to deploy image classification.


Object
Person
Pose
Activity

# Sequence Diag. for Training Model



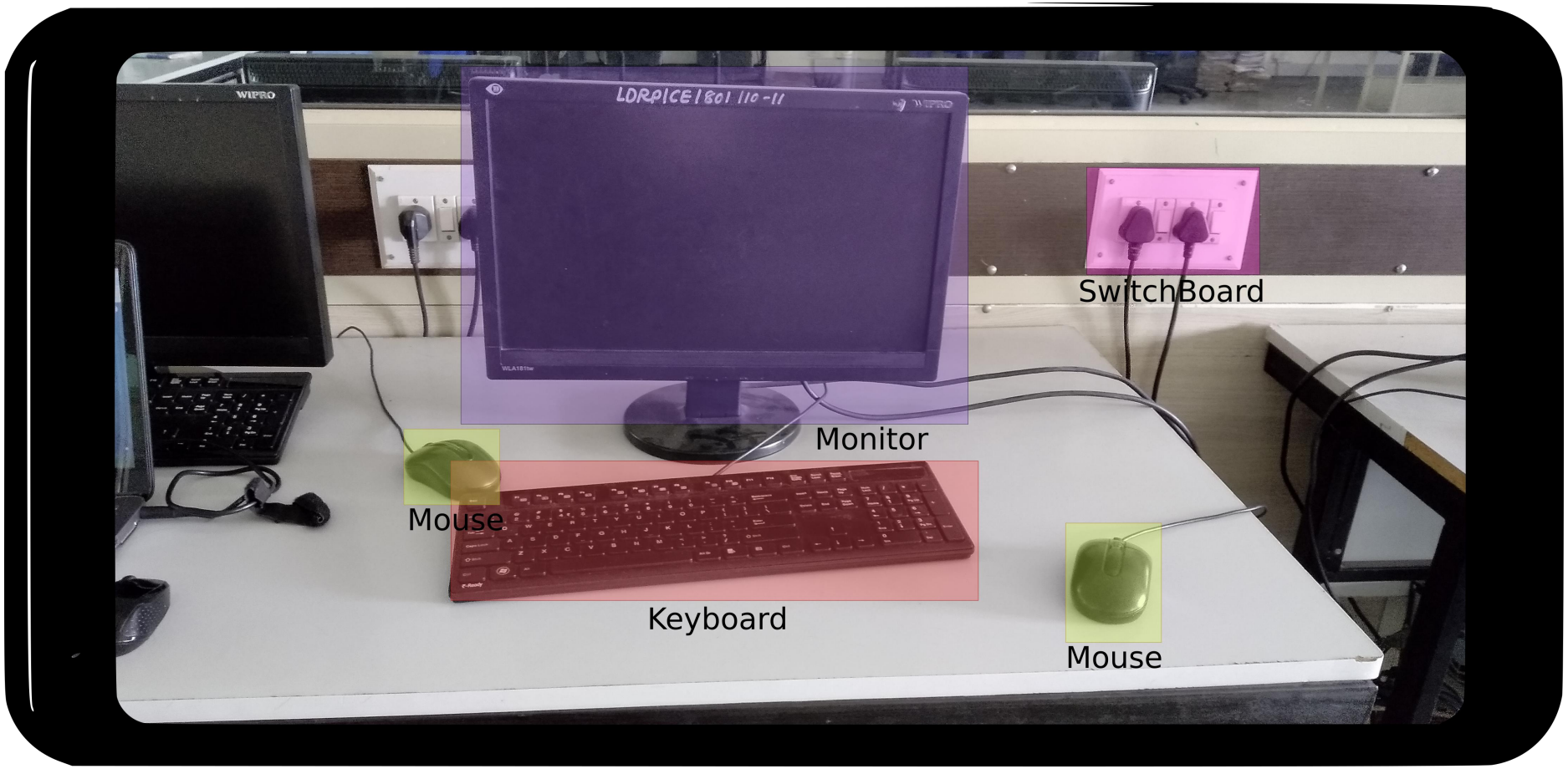
# Sequence Diag. for Live Data



# Steps

- Object Detection
- Person Classification (With unique person identity)
- Pose Classification
- Activity Classification

# Step 1 : Object Classification



# How is it done?

- Make a tensorflow model for object classification.
- Upload it as a custom model to firebase ML Kit.
- Integrate with Android App as a analysis Use Case for CameraX
- Upload Live Video to Firebase (set of images maybe) and get object category and its location on the image.
- Make a boundary over the object sent by our model.