

Customized Object Detection Model Integration with Android Training Course – 5 Days

Part 1: Introduction to Android App Basics (2 Days)

Module 1: Introduction to Kotlin

- Kotlin History
- Kotlin Advantages
- Creating a Kotlin Program
- Running a Kotlin Program
- The main () function
- Kotlin variables
- Kotlin Data Types
- Control Flow Statements: IF, IF-Else, When Statement
- Loops: For, While, Do-While
- Jump Expression
- Functions
- Objecting Oriented Programming
- Class
- Kotlin collections
- Kotlin coroutine: Async Programming

Module 2: Android Framework and Android Studio

- Android Platform Architecture
- Android Libraries
- Components of Android Application
- Overview of Android installation
- Installing Android Studio with Compose support
- Creation Kotlin Project using Android Studio
- Run Android App
- Setup and Android Device
- Run application on Hardware Device

Module 3 : Creating User Interface

Introduction

Android Project Structure

View

Adding a View to your application

Adding a View in an XML layout file

Adding a View using Kotlin code

Configuring Layout Views

Creating a User Interface

Adding a Text Box

Adding an Image

Adding a Check Box

Adding a Radio Button

Module 4 : Android Widgets

Progress Bar

Seek Bar

Date and Time Picker Dialogs

Creating a Date Picker

Creating a Time Picker

Calendar View

Web View

Rating Bar

Video View

Texture View

Part 2: Integration of ML with Android App (3 Days)

Module 5 : Data Annotation Basics

Importance of data annotation

Annotation techniques and tools

Hands-on practice with data annotation

Module 6 : Dataset Collection and Management

Strategies for dataset collection
Organizing and storing datasets
Version control and export formats

Module 7 : Introduction to TensorFlow Lite and Google Colab

Overview of TensorFlow Lite
Introduction to Google Colab for model training

Module 8 : Model Training Notebook and Uploading Dataset

Setting up a training notebook
Uploading annotated dataset for training

Module 9: Training Custom Object Detection Model

Configuring training parameters
Training object detection model using TensorFlow

Module 10: Model Evaluation and Optimization

Evaluating model performance
Optimizing model for mobile deployment

Module 11: Converting Object Detection Model Into TensorFlow Lite

Converting trained model to TensorFlow Lite format
Model optimization techniques

Module 12: Real-time Object Detection in Android

Implementing real-time object detection in Android
Integration with live camera feed

Module 13: Advanced Techniques and Model Comparison

Exploring advanced object detection models (EfficientDet, SSD MobileNet, YOLO)
Comparative analysis of model performance on Android platform