**Kitchen Interior Design App using Computer Vision and AR**

**Overview**

This repository contains the source code and documentation for an Android application that utilizes computer vision and Augmented Reality (AR) to enable users to design their kitchen interiors. The app leverages machine learning models to segment and classify various kitchen elements, allowing users to apply different styles and textures to create a personalized kitchen design.

**Introduction**

The Kitchen Interior Design App is an innovative tool that empowers users to create their ideal kitchen space. By harnessing the power of computer vision and AR, users can visualize and interact with their design in a realistic and immersive way.

**Features**

* Segmentation and classification of kitchen elements
* Real-time AR rendering
* Style and texture application
* Kitchen design generation

**Computer Vision**

**Segmentation**

The app utilizes image segmentation techniques to identify and separate various kitchen elements, such as walls, siding, roof, countertops, and cabinets.

**Classification**

Once segmented, the elements are classified using machine learning models to determine their specific type (e.g., wall, countertop, etc.).

**Model Architecture**

The machine learning models are built using a yolo v8 architecture, trained on a dataset of labeled kitchen images.

**AR Integration**

**ARCore**

The app utilizes ARCore to enable AR functionality on compatible Android devices.

**Scene Rendering**

The app renders the kitchen design in 3D, allowing users to visualize and interact with their design in real-time.

**Usage Guide**

**Scanning Walls**

Users scan their kitchen walls using the app's built-in scanner.

**Applying Styles and Textures**

Users select styles and textures to apply to the segmented kitchen elements.

**Generating Kitchen Designs**

The app generates a comprehensive kitchen design based on the user's inputs.

**Machine Learning Models**

**Training Data**

The machine learning models were trained on a dataset of labeled kitchen images of more than 10000.

**Model Evaluation**

The models achieved an accuracy of 89% on the test dataset.

**Technical Requirements**

**Hardware**

* Android device with ARCore support
* Camera

**Software**

* Android 10 or later
* ARCore SDK