ReVamp

SMART HOME RENOVATION SYSTEM

Government Engineering College, Gandhinagar

Prepared By : Deep Pancholi
: Viren Gajjar
: Dharmik Shah
: Jinal Patel

Guided By : Prof. Dhaval Khem
Tead ID : 64175

Abstract

1. The idea of this project primarily focuses on an Andriod based application that uses
   - Deep Learning (for Object Detection)
   - Machine Learning (for Recommender system)
   - Augmented Reality (for visualizing the product)

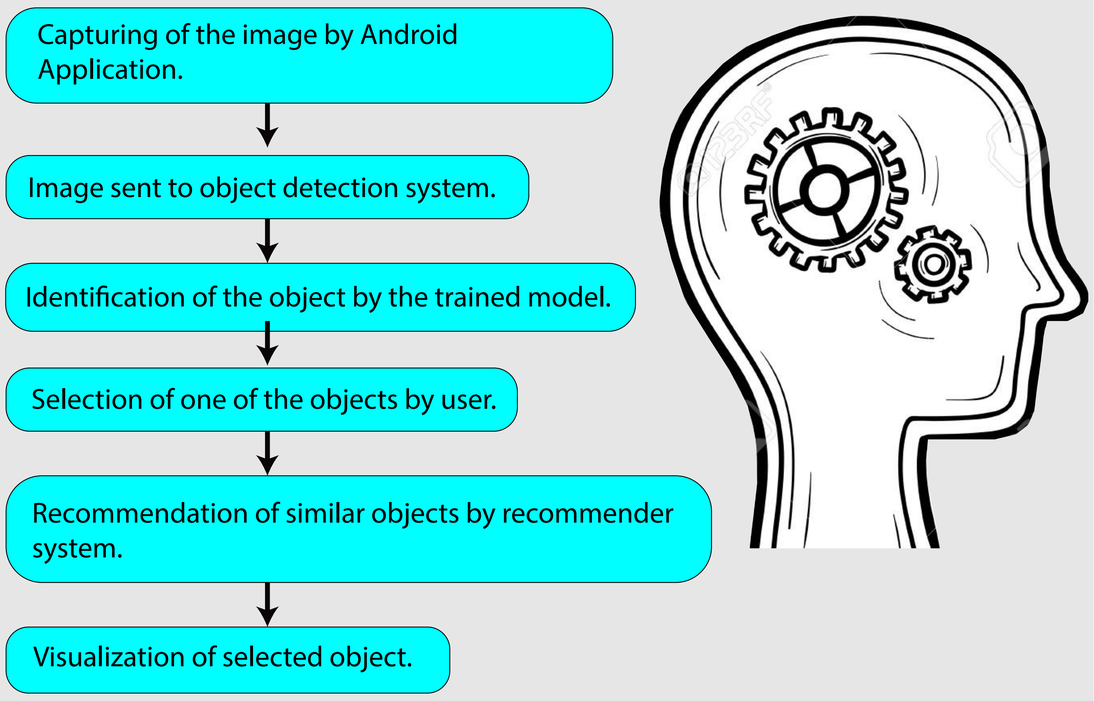
2. It describes the main field in the application which are applied to ease out the renovating process of the user in a smart way.

3. Our idea is to make an application that enables the users to visualize his personal space without facing the troubles like visiting shops/sellers and selecting new items.

4. Our aim is to make home renovation process so easy that no user will think twice before initiating the renovation/redesigning process.

5. The working of our application is divided into four simple steps :
   - The first is the detection of the existing product which one wants to replace.
   - The second is the recommendartion system which recommends a new product with visual features.
   - The third step comprises of visualizing the newly selected product.
   - Final step includes showing availibility of all purchase options to the user.

Functioning



Features and Benefits

1. In the domain of renovation, our system will yield more efficiency comparable to the best previous systems.

2. Used in real time applications. The app can minimize significant time of users, and helps in achieving the best designs for their space without stepping out.

3. Accurate detection of the product to be replaced with the new product.

4. Saves users from the trouble of visiting all the shops.

5. Easy visualization of products before finalising that product which helps in selecting a perfect product for the relevant space.

6. Lists nearby dealers using recommender system eventually helping the user in finding the desired product more easily.

7. Provides an interactive interface.

8. Hence providing a simple, convenient and user friendly environment and helping in making the process of renovation faster, better and cheaper.

Implementation

1. **Modules Completed :**
   - Andriod App for capturing images.
   - Dataset preparation
   - Image Preprocessing
   - Training object detection model using TensorFlow.

2. **Modules to be completed :**
   - Testing and Validating object detection model.
   - Providing a platform for
   - Visualization.(Augmented Reality)
   - Implementing Google Maps.
   - Integration of modules.

Conclusion and References

1. **Our learnings from this project :**
   - Basics of Andoid Studio
   - Gathering a large dataset of images of specific labels.
   - Preprocessing of datasets.
   - Implementing Google Firebase API's.

2. **References :**
   - Deep Learning Algorithms like
     - YOLO (You only look once)
     - CNN (Convolutional Neural Networks)
     - SSD (Single Shot Detection)
   - Referred to TensorFLow, OpenCV and GitHub repositories.
   - Cloud Services on Google Colab.