# Design Dos

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# Overview

Computer vision is **a field of artificial intelligence (AI) that enables computers and systems to derive meaningful information from digital images, videos and other visual inputs.** The highly advantageous web application based paradigm is highly in demand because of cross platform compatibility, more manageability, highly deployability and reduced costs. Integrating the above two is helping in acheiving strides in augmented reality world.

## Problem Statement

The problem is to develop a computer vision based AI system using open source or public AI for the AI funcitonality.

### Proposed Solution

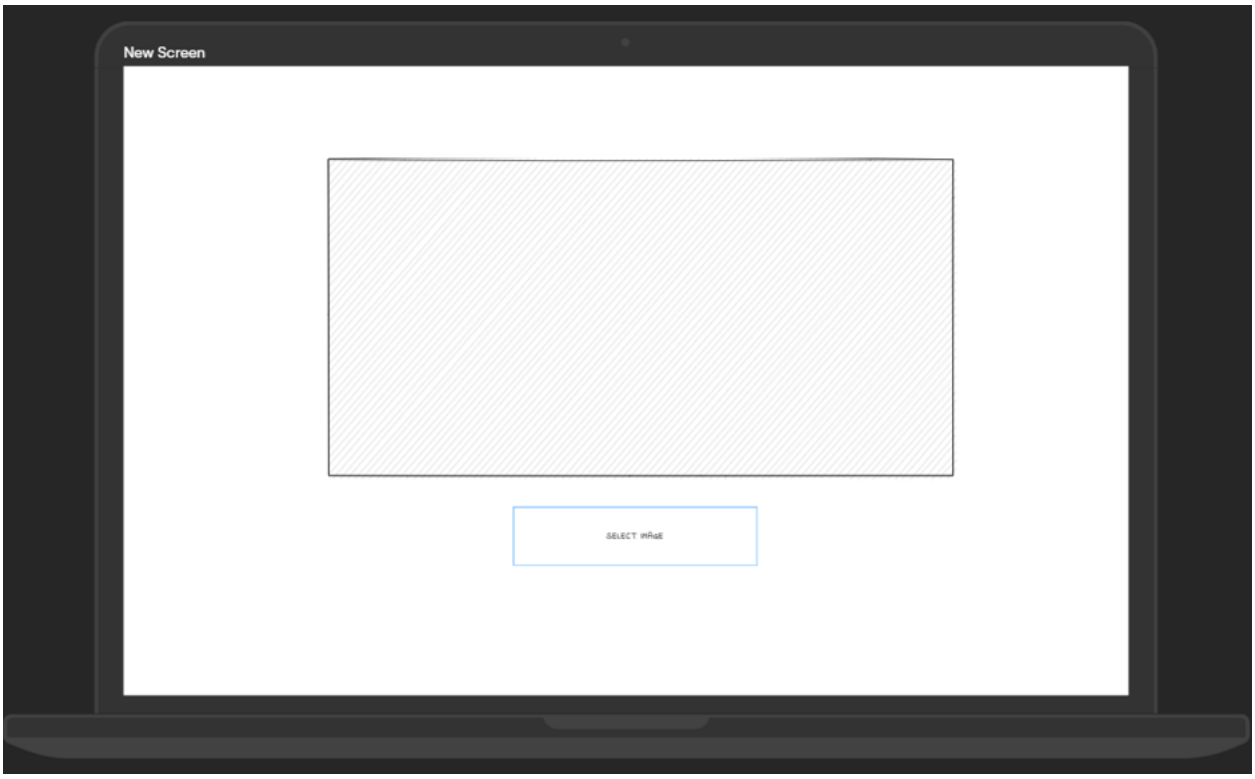
A web application is built using ReactJS with TensforFlow.js API for object detection, specifically COCO-SSD detection model which relies on Tensorflow for object recognition. It is very well trained and capable of detecting more than 90 classes from (Dogs, Cats, People, Cars...).

# User Interface

The following is the wireframe for the website

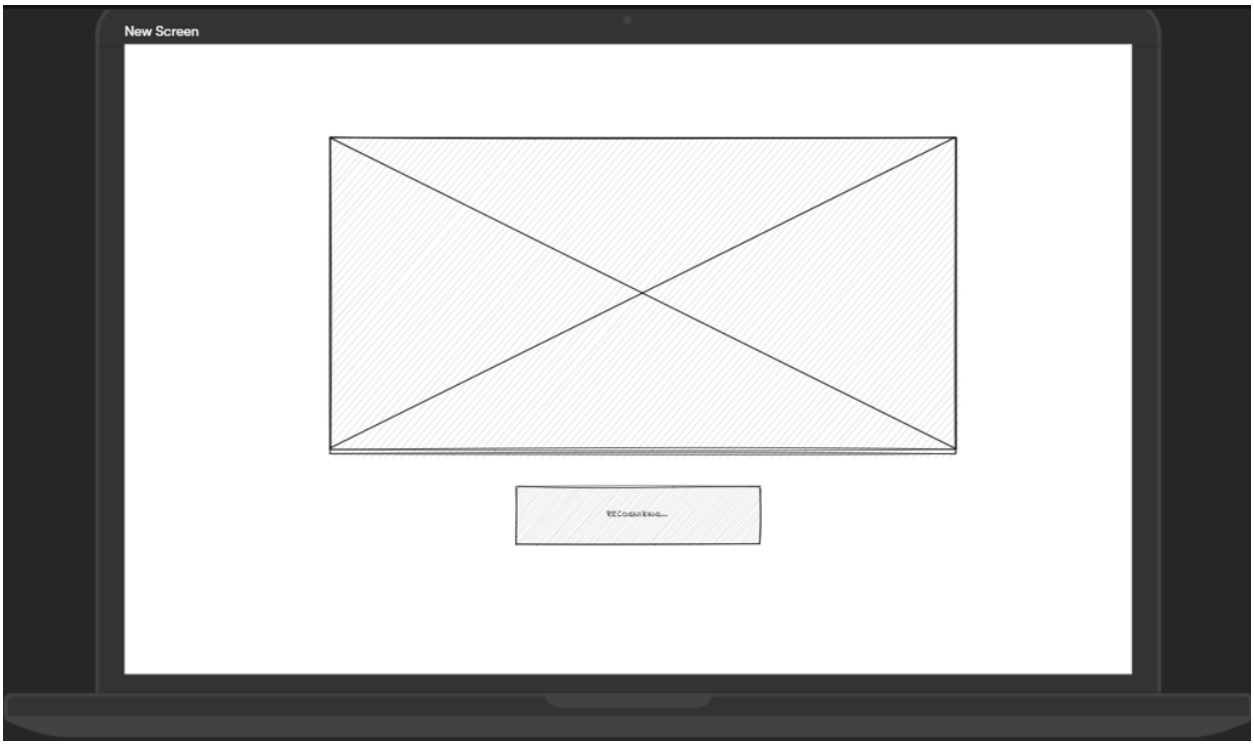
1. **Initialized**

The web application when opened for the first time shows a blank box with a select image button which opens a desktop button for selecting image file from the system.



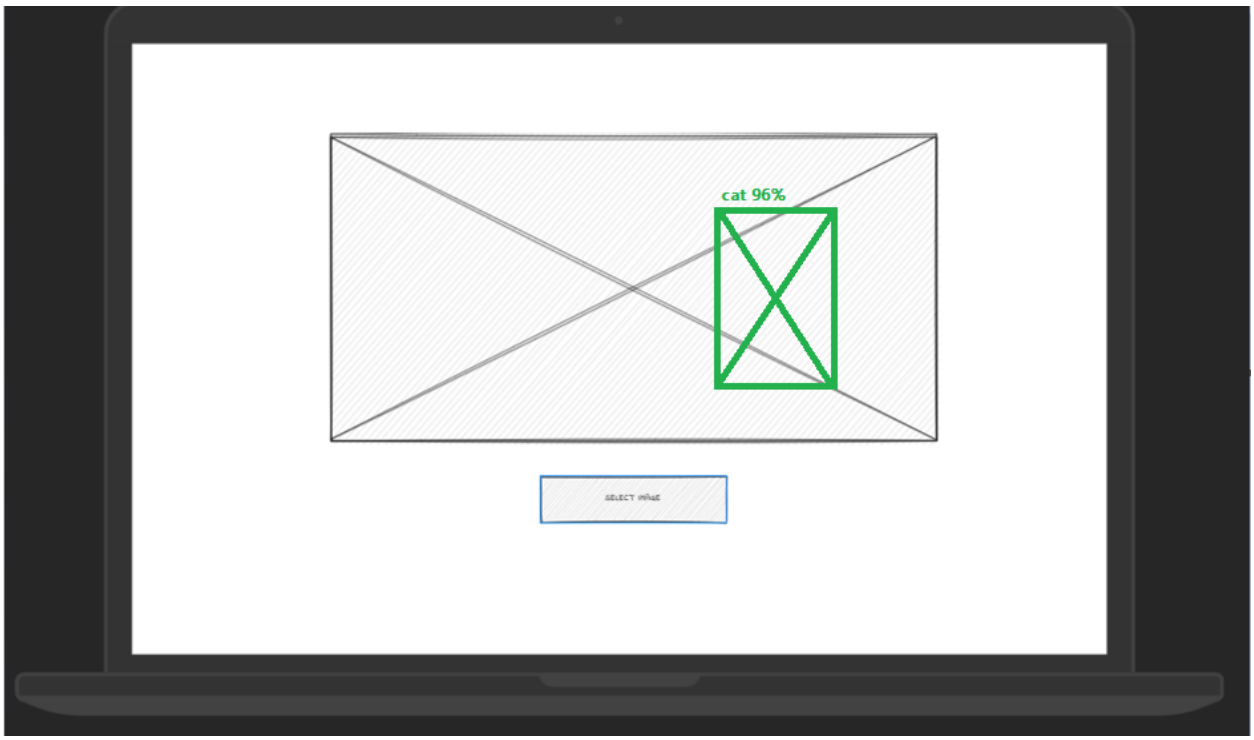

2. **Opened Image**

The selected image is then displayed upon the space and the backend tensorflow api works on the image to classify it.



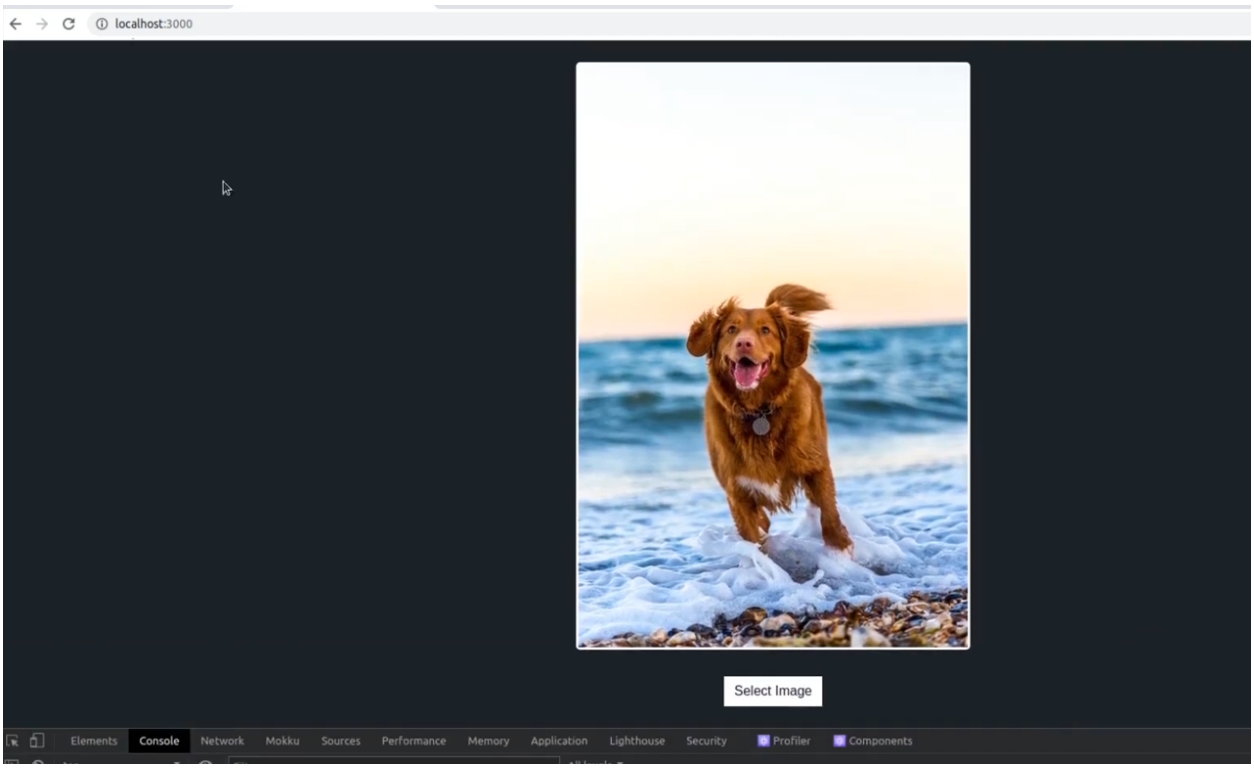

3. **Recognized Object**

The object is recognized and a green box is made around the identified object showing the most relatable class with match percentage.

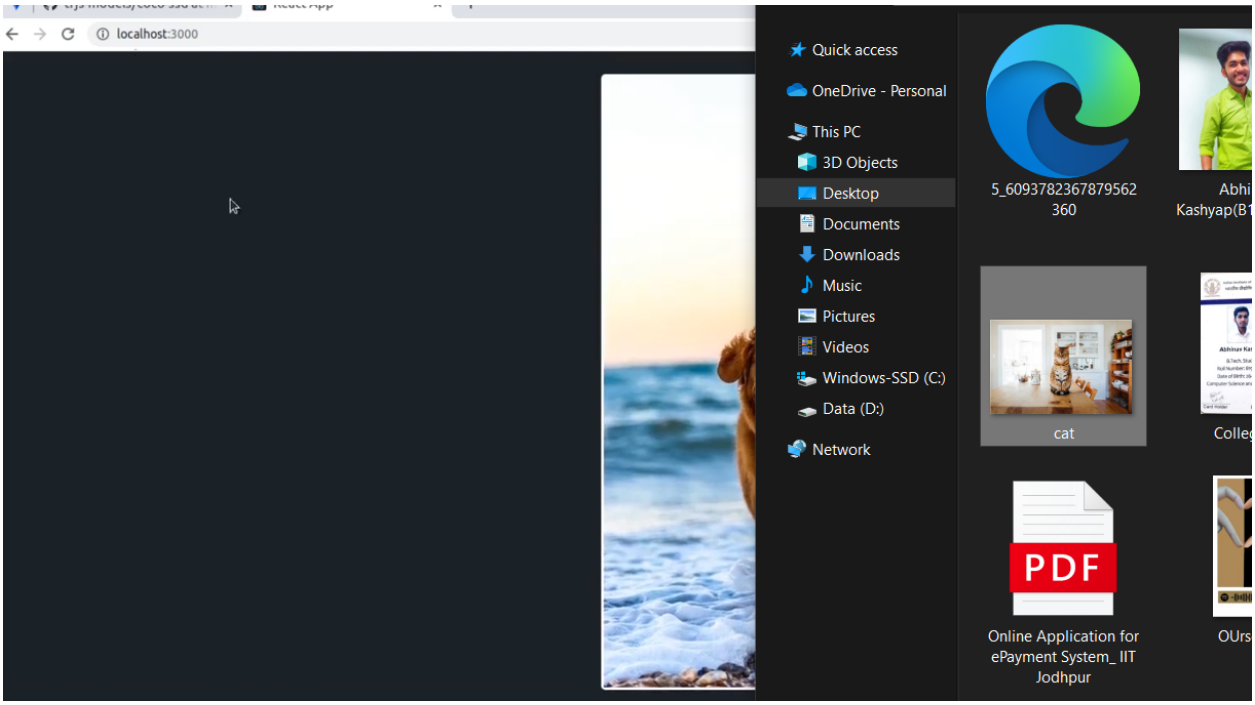


# Working WebApp

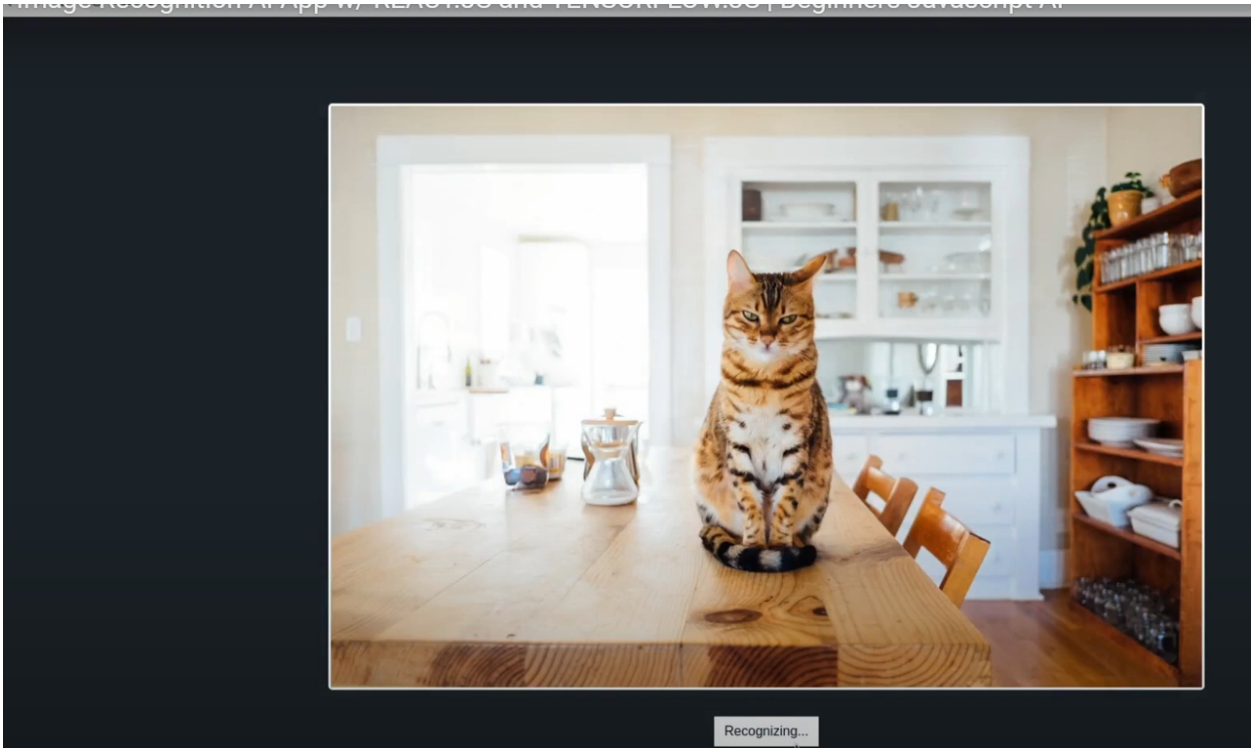
1. Clicking ***Select Image*** button



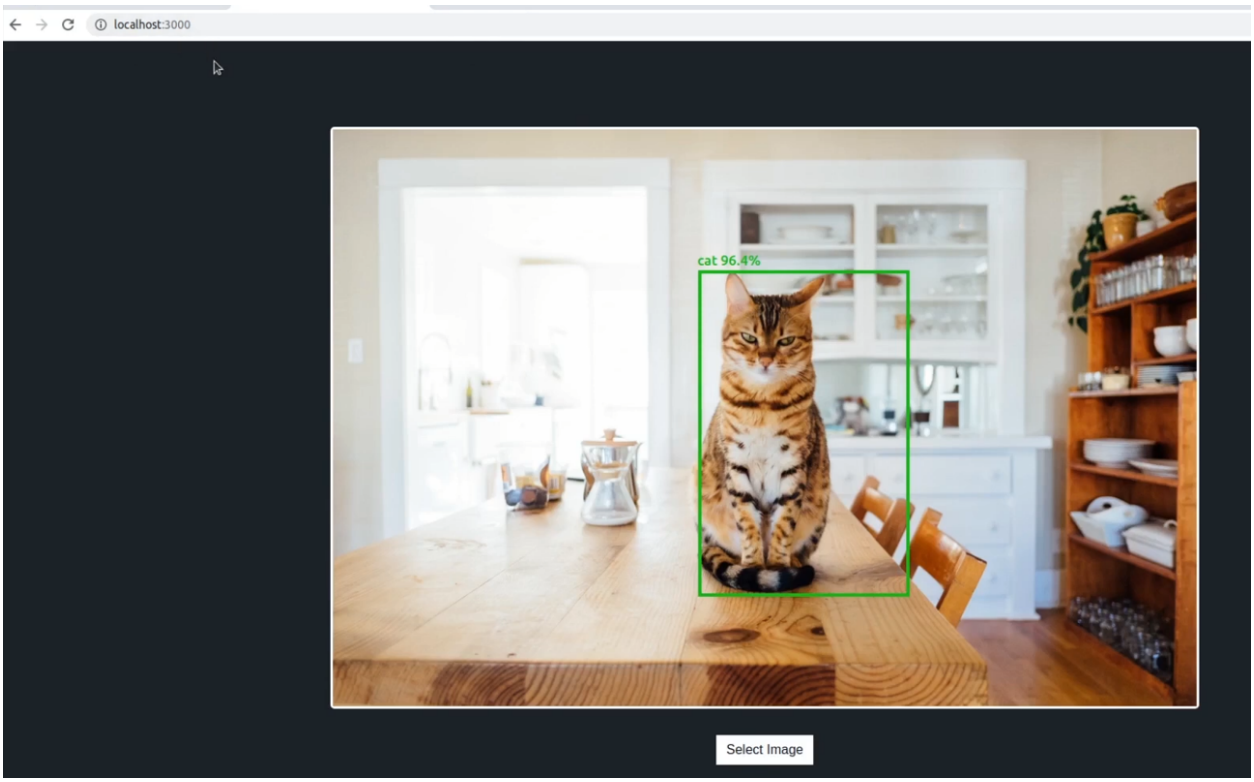

2. Selecting image from the system




3. Image is recognized by the TensforFlow js api




4. The image is recognized




# Technologies

1. **ReactJS**

React is a declarative, efficient, and flexible JavaScript library for building user interfaces. It lets you compose complex UIs from small and isolated pieces of code called “components”. React is used for the front end of web application.

2. **TensorFlow.JS**

Tensorflow.js is an open-source library enabling us to define, train and run machine learning models in the browser, using Javascript. I will use the Tensorflow.js in React to build a Web App that detects multiple objects.

The COCO-SSD model is used through the tensorflowjs api in the backend.

The AI functionality is applied in the backend since the information is to be sent and processed through the tensorflowjs API giving user the much needed abstraction.

# Requirements

Any browser supporting Javascript.