

Netwatch Object Recognition

Design Manual

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Introduction

This document will describe the system design of the technical functionalities of the Netwatch Object Recognition project.

The first part of this design document will give an overview of the system with a description of how the application will be used, followed by some UI/UX prototyped designs.

System Overview

The functional system overview of this project consists of two similar, yet separate demonstrative web server front-end applications for the purposes of demonstrating object detection in the ML.NET and the PyTorch machine learning frameworks. These web applications will allow users to use and visualise object detection on images from their local system.

The applications will be used in a way where users can upload an image file, and if the file is valid they have the option to 'detect' on that image. When the 'detect' button is clicked, the applications will make a request to an API implemented for performing object detection using server side trained object detection models, and redirect the user to a result page displaying the uploaded image with drawn detections.

UI/UX Prototypes

Prototype UI of Home Page

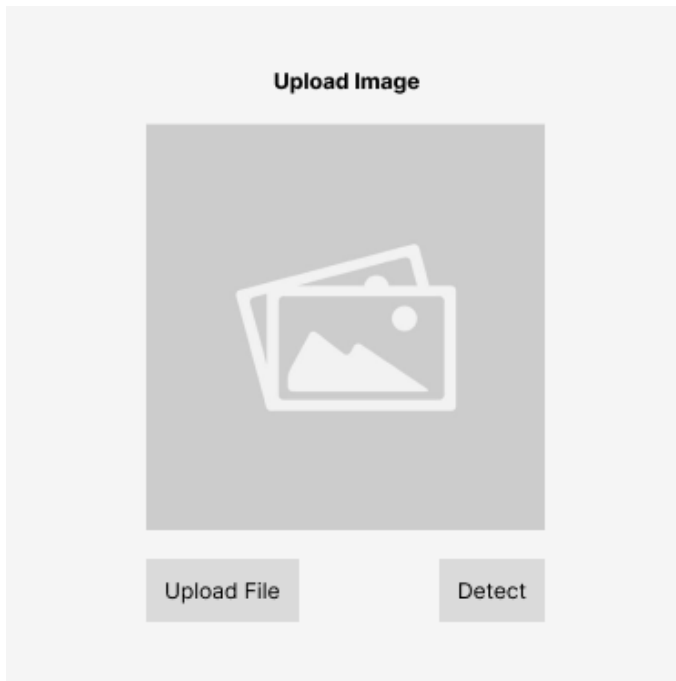


Figure 1 (Tremblay, 2021)

As the user opens the applications, they will be routed by default to a home page seen above, where they will be given the option of uploading an image from their local file system. If the file format is valid, the user can select the detect option which will call a server side API for inferencing an object detection model on the input image.

Prototype UI of Results Page



Figure 2 (Tremblay, 2021)

Once the object detection models have finished calculating the outputs for the given image, the user will be redirected to a results page (Figure 2) where the results from the detection models will be displayed over the original uploaded image. The user then has the option of returning to the home page by clicking a ‘back’ button.

Summary

The overall functional system of this project when it comes to the web server front-end applications is relatively simple, using routing and an API endpoint for inferencing object detection models on user input. As mentioned, the design will be replicated for demonstrating both ML.NET and PyTorch detections after model training.