Final Year Project Plan

SCSE23-0501 – Object Detection on a Mobile Device

Dion Toh Siyong
U2021674D
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School of Computer Science & Engineering
Nanyang Technological University, Singapore

Submitted to—
Dr Deepu Rajan
School of Computer Science & Engineering
Nanyang Technological University, Singapore

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Background

In an age dominated by the rapid evolution of deep fake technology, the urgent need to combat the spread of digitally manipulated content has never been more pressing. I will utilise Detectron2, a state-of-the-art object detection framework, to train a detection model aimed at efficiently identifying deep fake content. Current solutions for detecting deep fakes are resource-intensive, limiting accessibility for the average user and resource-constrained environments. This project aims to solve this problem by training a lightweight model, optimised to be able to be deployed on widely available hardware such as smartphones.

Objective

The primary aim of this project is to create an efficient deep learning framework tailored for object detection, specifically designed for mobile device deployment. Our approach leverages Detectron2, an advanced object detection framework developed by Facebook AI Research, known for its cutting-edge performance in this domain. The end goal is for the object detection model to be able to help identify deep fake content.

Timeline

The project will be carried over two semesters, including the winter break of December. The project has been divided into four sub-parts:

1. **Project Planning**
    a. Project Scope
    b. Requirements Elicitation
    c. Literature Review

2. **Machine Learning**
    a. Data Collection
    b. Data Preparation
    c. Model Training
    d. Accuracy Testing
    e. Model Optimisation and Refinement

3. **Mobile App**
    a. Mobile Application Development
    b. Deployment of ML model and Testing

4. **Project Deliverables**
    a. Interim FYP Report
    b. Final FYP Report
    c. Amended Final FYP Report
    d. Completed Mobile App
    e. Oral Presentation

Gantt Chart

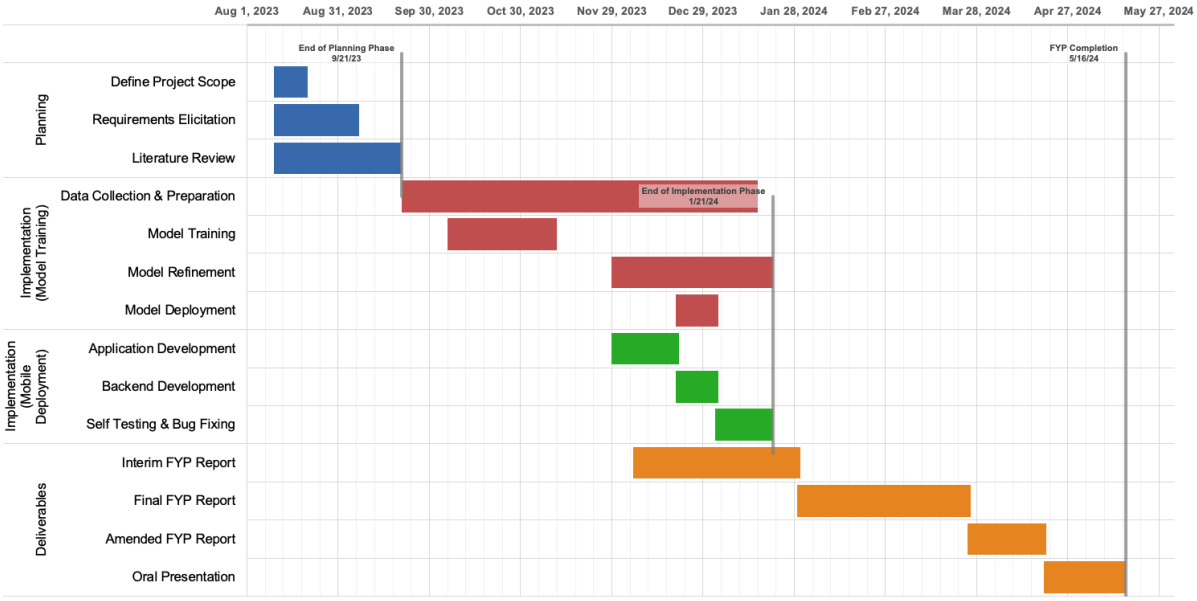

Figure 1: Gantt chart for the project. A task gap is present in November to account for the semester end examinations.

Work Breakdown Structure

Category	Name	Estimated Start Date (MM/DD/YY)	Estimated End Date (MM/DD/YY)
Planning	Define Project Scope	8/10/23	8/20/23
	Requirements Elicitation	8/10/23	9/6/23
	Literature Review	8/10/23	9/20/23
Implementation (Model Training)	Data Collection & Preparation	9/21/23	1/15/24
	Model Training	10/6/23	11/10/23
	Model Refinement	11/29/23	1/20/24
	Model Deployment	12/20/23	1/2/24
Implementation (Mobile Deployment)	Application Development	11/29/23	12/20/23
	Backend Development	12/20/23	1/2/24
	Self Testing & Bug Fixing	1/2/24	1/20/24
Deliverables	Interim FYP Report	12/6/23	1/29/24
	Final FYP Report	1/29/24	3/25/24
	Amended FYP Report	3/25/24	4/19/24
	Oral Presentation	4/19/24	5/15/24