Vision-Aware Smart Assistant – Updated Project Plan (May 6–13)

# Project Summary

This project integrates real-time object detection using a deep learning model with smart assistant voice interfaces. A YOLOv5 model will run on a local machine to detect objects from a webcam feed, log them with timestamps, summarize them periodically, and respond to user voice queries via Google Assistant or Amazon Alexa using Home Assistant integration.  
This document outlines a revised project plan with a focused 8-day timeline (May 6–May 13), covering each modular component through mini Proof of Concept (POC) tasks, leading to final integration and deliverables.

# Timeline Overview

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| Date | Milestone | Details |
| May 6 | POC 1: Object Detection | Run YOLOv5 or MobileNet on webcam feed; print detected labels in real-time. |
| May 7 | POC 2: Label Logging | Save detected labels and timestamps to a local JSON file every few seconds. |
| May 8 | POC 3: Summarizer | Aggregate logged data and return a text summary of objects seen in the past hour. |
| May 9 | POC 4: Text-to-Speech | Speak summary text aloud using a Python TTS engine (e.g., pyttsx3). |
| May 10 | POC 5: Home Assistant Integration | Post summary to a Home Assistant sensor entity using REST API. |
| May 11 | POC 6: Voice Query Integration | Set up custom intent in Home Assistant to read back the summary via Google or Alexa. |
| May 12 | Final Demo Recording | Record 2-minute and 15-minute videos demonstrating all integrated parts. |
| May 13 | Documentation & Submission | Finalize MS Word report, PowerPoint slides, and submit all deliverables. |

# Mini Proofs of Concept (POCs)

## POC 1: Object Detection

Run YOLOv5 or MobileNet on webcam feed. Print detected labels in real-time.

## POC 2: Label Logging

Save detected labels with timestamps to a local JSON file every few seconds.

## POC 3: Summarizer

Aggregate the log file and generate a summary of objects seen in the past hour.

## POC 4: Text-to-Speech Output

Use Python TTS libraries (e.g., pyttsx3) to speak the generated summary aloud.

## POC 5: Home Assistant Sensor Push

Post summary text to Home Assistant via REST API and verify it appears in the dashboard.

## POC 6: Voice Query Integration

Ask Google or Alexa a custom question and receive a response from the Home Assistant sensor.

# Final Deliverables Checklist

* ☐ 1-page summary (DOCX) with YouTube links
* ☐ Full working demo code (YOLOv5, logging, summarization, integration)
* ☐ PowerPoint slides (10–20 slides, white background)
* ☐ MS Word report with reproducibility steps
* ☐ 15-minute YouTube video presentation
* ☐ 2-minute YouTube teaser demo
* ☐ Backup all media/code to cloud for submission
* ☐ Prepare fallback version of the system if needed