Project Title:

ProVisionAI: Unleashing the Power of Gemini Vision for Image Annotation

Team Name:

Techies

Team Members:

- B. Kusuma
- E. Manasa
- A. Triveni
- B. Manasa

Phase-1: Brainstorming & Ideation

Objective:

To develop an AI-driven image annotation system using Google Gemini Vision AI that automates object detection, segmentation, and contextual labeling with high accuracy. The system aims to reduce manual effort, enhance annotation speed, and introduce multi-modal inputs (text, voice, and gestures) for improved accessibility

Key Points:

1. **Problem Statement:**

   - **Manual and Inefficient Annotation** – Traditional image annotation is slow, labor-intensive, and inconsistent, leading to inefficiencies and biased AI model training.

   - **Lack of Automation and Contextual Intelligence** – Existing tools lack AI-driven real-time labeling, NLP-powered descriptions, and multi-modal inputs like voice or gestures, limiting scalability and accessibility.

Phase-2: Requirement Analysis

Objective:

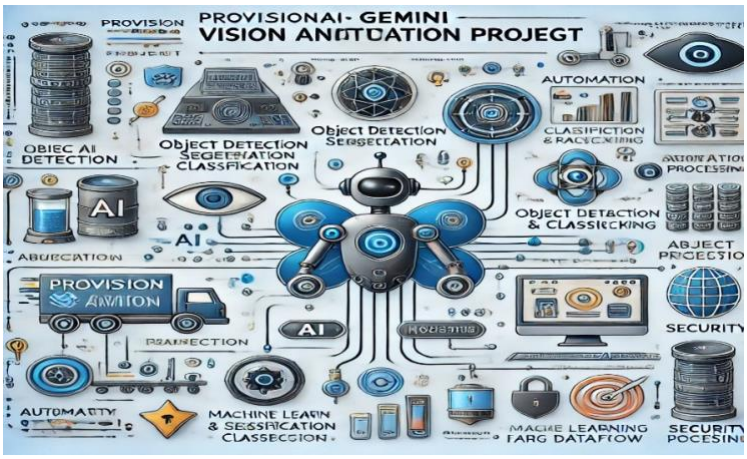
In requirement analysis, the objective of ProVisionAI Gemini is to define and establish the essential needs for an AI-driven vision annotation system. The goal is to ensure high-precision annotation for image and video data, supporting tasks like object detection, segmentation, classification, and tracking. The system should be scalable, efficient, and integrate seamlessly with existing machine learning workflows.

Key Points:

- **High-Precision Annotation** – Ensures accuracy in object detection, segmentation, classification, and tracking.
- **Scalability & Efficiency** – Capable of handling large datasets and complex AI-driven workflows.
- **Seamless ML Integration** – Works smoothly with existing machine learning pipelines.

Phase-3: Project Design

Objective: The objective of the project design in ProVisionAI Gemini Vision Annotation is to create a scalable, efficient, and AI-driven annotation system for image and video data. The design focuses on supporting advanced annotation tasks such as object detection, segmentation, classification, and tracking while ensuring high accuracy and automation.



Key Points:

- **AI-Driven Annotation** – Supports object detection, segmentation, classification, and tracking.
- **Automation & Efficiency** – Reduces manual work with AI-powered annotation tools.
- **Seamless Machine Learning Integration** – Connects smoothly with ML and AI pipelines.
- **Real-Time Processing** – Ensures fast and responsive annotation for large datasets.

Phase-4: Project Planning (Agile Methodologies)

Objective:

The objective of project planning in ProVisionAI Gemini Vision Annotation is to establish a structured roadmap for the development, integration, and deployment of an AI-powered image annotation system. The planning ensures efficient resource allocation, seamless execution, and high-quality outcomes.

Sprint	Task	Priority	Duration	Deadline	Assigned To	Dependencies	Expected Outcome
Sprint 1	Environment Setup & API Integration	🔴 High	6 hours (Day 1)	End of Day 1	B. Kusuma	Google API Key, Python, Streamlit setup	API connection established & working
Sprint 1	Streamlit web interface	🟡 Medium	2 hours (Day 1)	End of Day 1	E. Manasa	Google generative SDK	Image uploading
Sprint 2	Image upload and management	🔴 High	3 hours (Day 1)	Mid-Day 2	Member 2&4	Image uploading	Image description generation
Sprint 2	Gemini AI integration	🔴 High	1.5 hours (Day 1)	Mid-Day 2	B. Manasa	Generative AI	Improved API stability
Sprint 3	Optimize description generation	🟡 Medium	1.5 hours (Day 2)	Mid-Day 2	A.Thriveni	Temporary file handling	Responsive UI, better user experience
Sprint 3	User interaction	🟢 Low	1 hour (Day 2)	End of Day 2	Member 3 &4	OS modules	Temporary image management
Sprint 4	Testing and debugging	🟡 Medium	1 hour (Day 2)	End of Day 2	Member 1 & 2	Working prototype	Error handling
Sprint 4	Deployment and Documentation	🟡 Medium	1 hour (Day 2)	End of Day 2	Entire Team	Working prototype	Demo-ready project

Sprint Planning with Priorities

Sprint 1 – environmental setup and API integration (Day 1)

(High Priority) Set up the **environment** & install dependencies.
High Priority) Integrate **Google Gemini API**.
(Medium Priority) Build a **basic UI with input fields**.

Sprint 2 – Image upload and management (Day 2)

(High Priority) Gemini AI integration.
(High Priority) Debug API issues & handle **errors in queries**.

Sprint 3 – Testing, Enhancements & Submission (Day 2)

Phase-5: Project Development

Objective:

The primary objective of **ProVisionAI** is to **leverage the Gemini Vision API for automated and efficient image annotation** to enhance machine learning model training and image-based applications.

Key Points:

Clear Objectives – Define goals for AI-driven image annotation.
API Integration – Seamlessly connect ProVisionAI with Gemini Vision.
Data Processing – Establish a structured image annotation workflow.
AI-Powered Annotation – Automate object detection, labeling, and captions.
Manual Validation – Implement human-in-the-loop for accuracy.
Model Training – Use annotated data to improve AI performance.

Phase-6: Functional & Performance Testing

Objective:

The objective of **functional and performance testing** is to **ensure that the ProVisionAI annotation system operates correctly, efficiently, and reliably under various conditions**. This involves validating both **core functionalities** and **system performance** to deliver a robust and scalable AI-driven annotation solution.

Final Submission

1. **Project Report Based on the templates**
2. **Demo Video (3-5 Minutes)**
3. **GitHub/Code Repository Link**
4. **Presentation**