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School of Computer Science Engineering and Information Systems

Web Development - UBCA204L

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Abstract

Title : AI Powered Drawing Board

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AI-Powered Drawing Board

1. Introduction

The AI-Powered Drawing Board is an interactive web-based application that enables users to sketch, customize brushes, add text, and save their drawings. Designed to be intuitive and responsive, it provides a seamless digital canvas experience. The application incorporates AI-based recognition, allowing users to identify objects in their drawings and receive real-time feedback. Additionally, an AI-guided drawing assistant helps users by suggesting outlines based on descriptions.

Built using HTML, CSS, JavaScript, PHP, and MySQL, the project ensures smooth rendering, secure storage, and real-time AI processing while maintaining a lightweight and optimized workflow.

2. Key Features & Modules

The application consists of five main pages, each designed with a specific purpose.

1. Home Page (Landing Page)

- Welcome UI – Interactive intro to the drawing board.
- User Authentication – Login/Signup (optional) for saving artworks.
- Quick Start Button – Directs users to the drawing interface.
- Showcase Gallery – Displays popular community drawings.
- Mobile & Desktop Responsive – Optimized for all screen sizes.

2. Drawing Page (Main Canvas)

- Sketching & Painting Tools – Customizable brush sizes and colors.
- Text Addition – Allows adding and formatting text overlays.
- Undo/Redo Options – Enables flexible modifications.
- Canvas Clearing – Reset the drawing with one click.
- Save as Image – Download the artwork locally.

3. AI Recognition Page

- Object Detection – AI analyzes and identifies drawn objects.

- Real-Time Feedback – Displays AI-generated labels (e.g., 'This looks like a cat!').
- Drawing Assistance – AI suggests outlines based on descriptions.
- Confidence Score – Shows accuracy percentage of AI recognition.
- Overlay Suggestions – AI-generated hints for refining artwork.

4. User Dashboard (Saved Drawings)

- Gallery View – Users can view and manage their saved drawings.
- Edit & Rework – Load saved drawings back onto the canvas.
- Cloud Storage (MySQL Backend) – Store drawings securely in the database.
- Share Feature – Generate a shareable link to showcase artwork.
- Delete & Organize – Users can remove unwanted drawings.

5. About & Contact Page

- Project Overview – Brief explanation of the drawing board and its AI features.
- Technology Stack Information – Lists the frameworks and tools used.
- FAQs & Troubleshooting – Guides users on common issues.
- Developer Contact Form – Allows feedback and inquiries.
- Social Media Links – Connects users to the project's community.

3. Technology Stack Used

Frontend (User Interface & Interaction)

- HTML5 – Structure of the web pages.
- CSS3 (Flexbox, Grid, Media Queries) – Styling and responsiveness.
- JavaScript (Vanilla JS, Canvas API) – Dynamic interactions & drawing functionalities.

Backend (Data Handling & AI Integration)

- PHP – Server-side scripting, form handling, and AI API communication.
- MySQL – Stores user data and saved drawings in a structured database.

AI Integration (Recognition & Assistance)

- JavaScript Fetch API – Used to send drawing data to an AI service.

- AI API (Placeholder for Gemini API or OpenAI API) – Provides object detection and guidance.

Additional Features & Optimization

- Local Storage & Database Sync – Saves drawings in the browser and backend.
- Image Processing (Canvas to PNG Conversion) – Enables downloading artwork.
- Security Measures (SQL Injection Prevention, Input Validation) – Ensures data integrity.

4. Conclusion

The AI-Powered Drawing Board bridges creativity and artificial intelligence, providing users with an interactive digital sketching tool enhanced by AI-powered object recognition and guided assistance. The project is built with HTML, CSS, JavaScript, PHP, and MySQL, ensuring a fast, smooth, and scalable experience.

This platform offers artists, designers, and casual users an engaging way to create, modify, and analyze drawings, making digital art more interactive and accessible. Future improvements could include advanced AI models for better recognition, collaborative real-time drawing, and cloud storage integration.