

Collaborative Whiteboard

Using WebGL

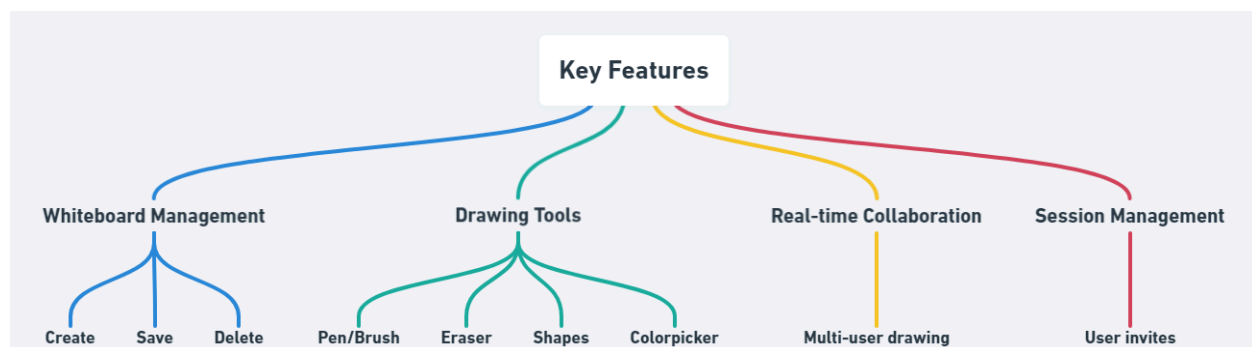
Project Overview:

The Collaborative Whiteboard Application is a real-time, web-based platform that allows multiple users to draw, interact, and collaborate on a shared canvas. It features essential drawing tools, session management, and real-time updates, making it ideal for group brainstorming and creative collaboration. The application provides a seamless experience for users to work together, regardless of location.

Core Functionalities:

Key Features

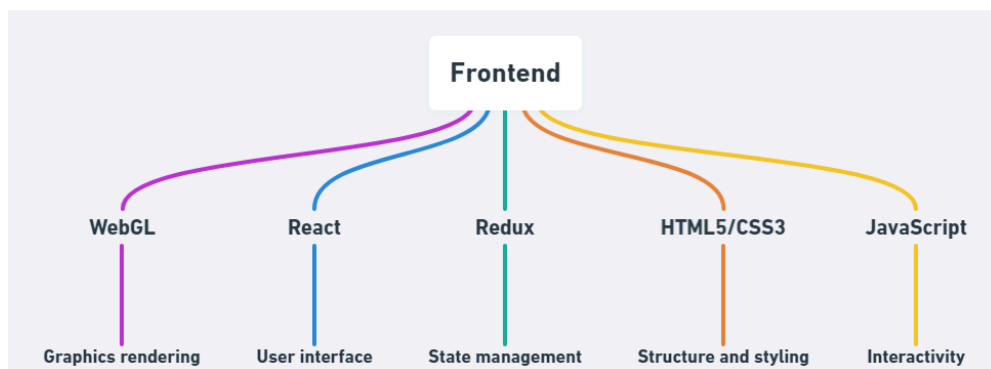
- **Drawing Tools:** Pen, shapes, text, color picker, and eraser.
- **Real-Time Updates:** Instant synchronization of drawing actions across all users.
- **Whiteboard Management:** Create, save, open, and delete whiteboards.
- **Session Management:** User Invites.
- Additional features such as active user tracking and chat functionality will be implemented following the completion of the basic prototype.



Tech Stack

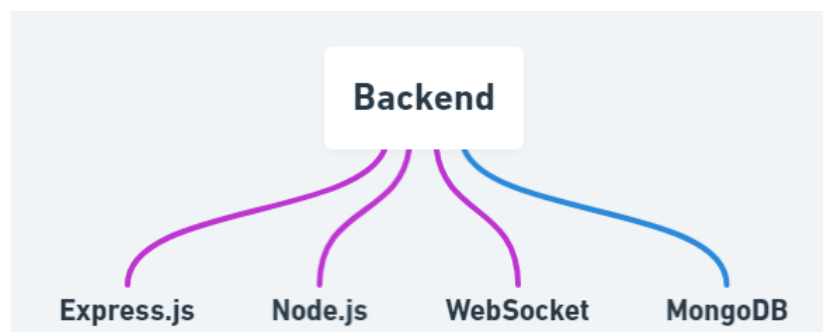
Frontend:

- **WebGL:** For rendering graphics and drawing on the whiteboard.
- **HTML5/CSS3:** For structuring and styling the web application.
- **JavaScript:** For logic and interactivity.
- **React:** For building a responsive user interface.
- **Redux:** For managing the application state.



Backend:

- **Node.js:** Server-side runtime.
- **Express.js:** Routing and middleware.
- **WebSocket:** Real-time communication.
- **MongoDB:** Database for storing data.



Architecture

Frontend Components:

- Authentication, whiteboard, toolbar, and user list components.
- WebGL for canvas setup and drawing logic.
- Redux for state management.

Backend Components:

- Express server for API endpoints and session management.
- WebSocket server for real-time data transmission.
- MongoDB for data persistence.

Use Cases

- **Education:** Collaborative learning and group projects.
- **Business:** Remote team brainstorming and planning.
- **Creative Projects:** Shared space for artists and designers to work together.

Expected Outcomes

- **Enhanced Collaboration:** Improved productivity and creativity through real-time collaboration.
- **Flexible Usage:** Usable across various fields such as education, business, and art.
- **User Engagement:** Intuitive interface and engaging tools to facilitate effective collaboration.

Target Audience

- **Students and Educators:** For collaborative learning and project work.
- **Remote Teams:** For brainstorming and planning sessions.
- **Creative Professionals:** For collaborative design and art projects.

