NEXT GEN EMPLOYABILITY PROGRAM

CREATING A FUTURE-READY WORKFORCE

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CAPSTONE PROJECT SHOWCASE

Project Title

REAL TIME COLLABORATION TOOL

Abstract | Problem Statement | Project Overview | Proposed Solution | Technology Used | Modelling & Results | Conclusion | Q&A

Abstract

1. **Technology Stack**: Utilize MongoDB for data storage, Express.js for server-side routing, React for the front-end UI, and Node.js for handling back-end logic and WebSocket communication to support live collaborative features.

2. **Real-Time Collaboration**: Implement Web Sockets to ensure seamless real-time synchronization of changes across all users editing the document, with live updates on content modifications and user actions.

3. **User Interface**: Create an intuitive, responsive UI using React to allow users to easily edit text, track changes, and manage multiple collaborators, with features like user roles, comments, and version control.

4. **Security and Scalability**: Implement user authentication and authorization with secure login systems, and design the architecture to be scalable, ensuring the tool can handle increasing numbers of concurrent users while maintaining performance.

Problem Statement

- Modern collaborative work demands real-time tools that allow multiple users to edit and share documents seamlessly. Many tools struggle with synchronization , leading to version conflicts and delayed updates. The challenge is to build a system that ensures smooth , instant collaboration while managing authentication, document storage, and real time communication effectively.

Project Overview

- **The Real collaboration Tool is a web based application designed to facilitate synchronous document editing and management .**
- **Efficient Document Management**
- **Secure User Access**
- **Real Time collaboration**
- **User Friendly Interface**
- **Robust Backend**

Proposed Solution

- Develop a real time collaboration tool using the MERN stack with Socket.IO integration
- Frontend (React.js): Enable user engagement and live document editing
- Backend (Node.js + Express.js): Manages authentication , API endpoints, and communication.
- Database(MongoDB): Stores user data and documents
- Socket.IO: Provides instant updates and synchronization across users.

Technology used

Frontend : react.js for building dynamic user interfaces, Bootstrap for styling and Socket.io for real time updates.

Backend: Node.js and express.js for server – side logic . MongoDB for database management and Socket.io for real time communication.

Authentication: JSON Web Token for secure user authentication and authorization

Development Tools: Axios for HTTP requests, and tools for version, coding , testing and deployment

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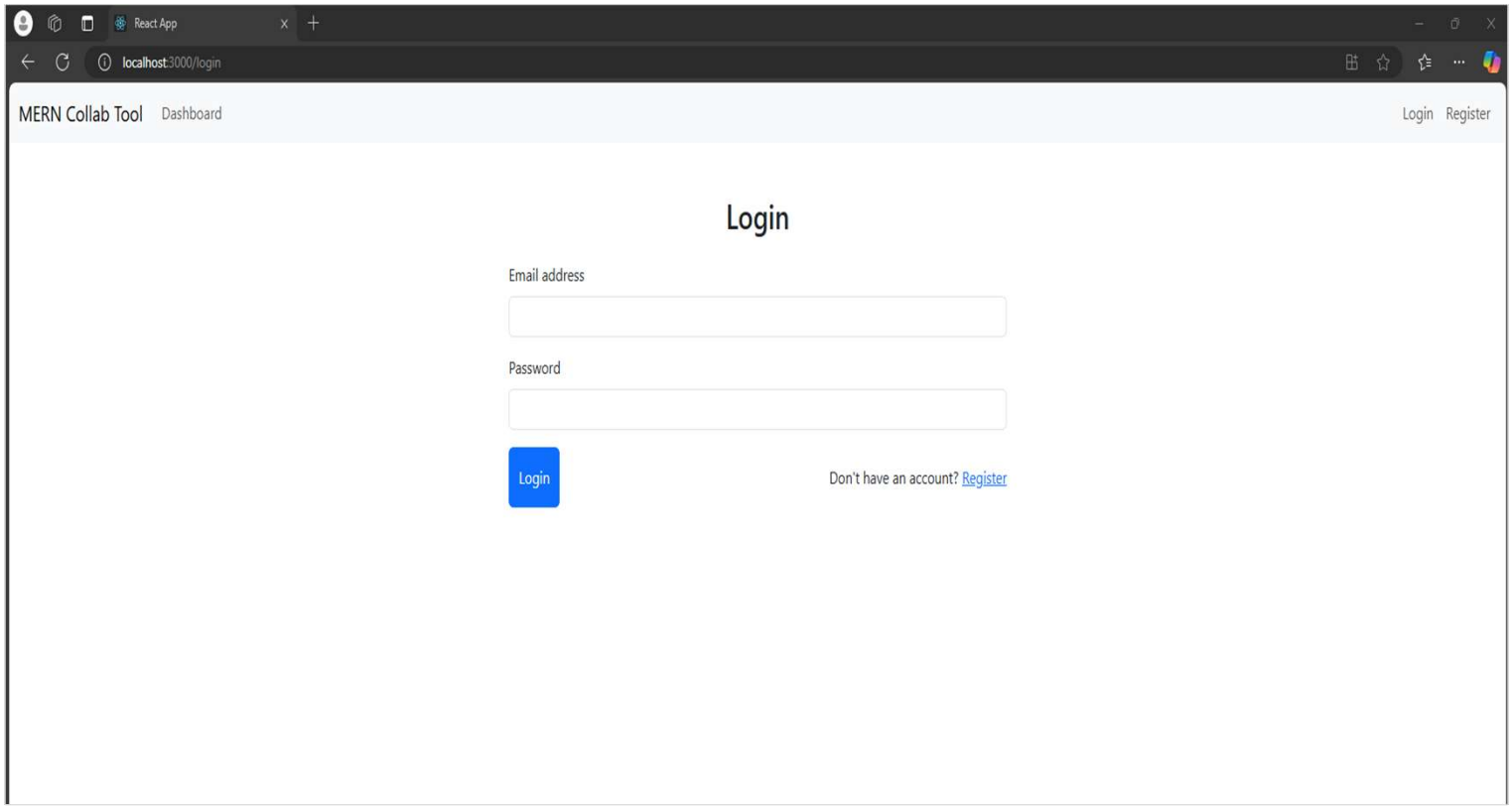
Modelling & Result



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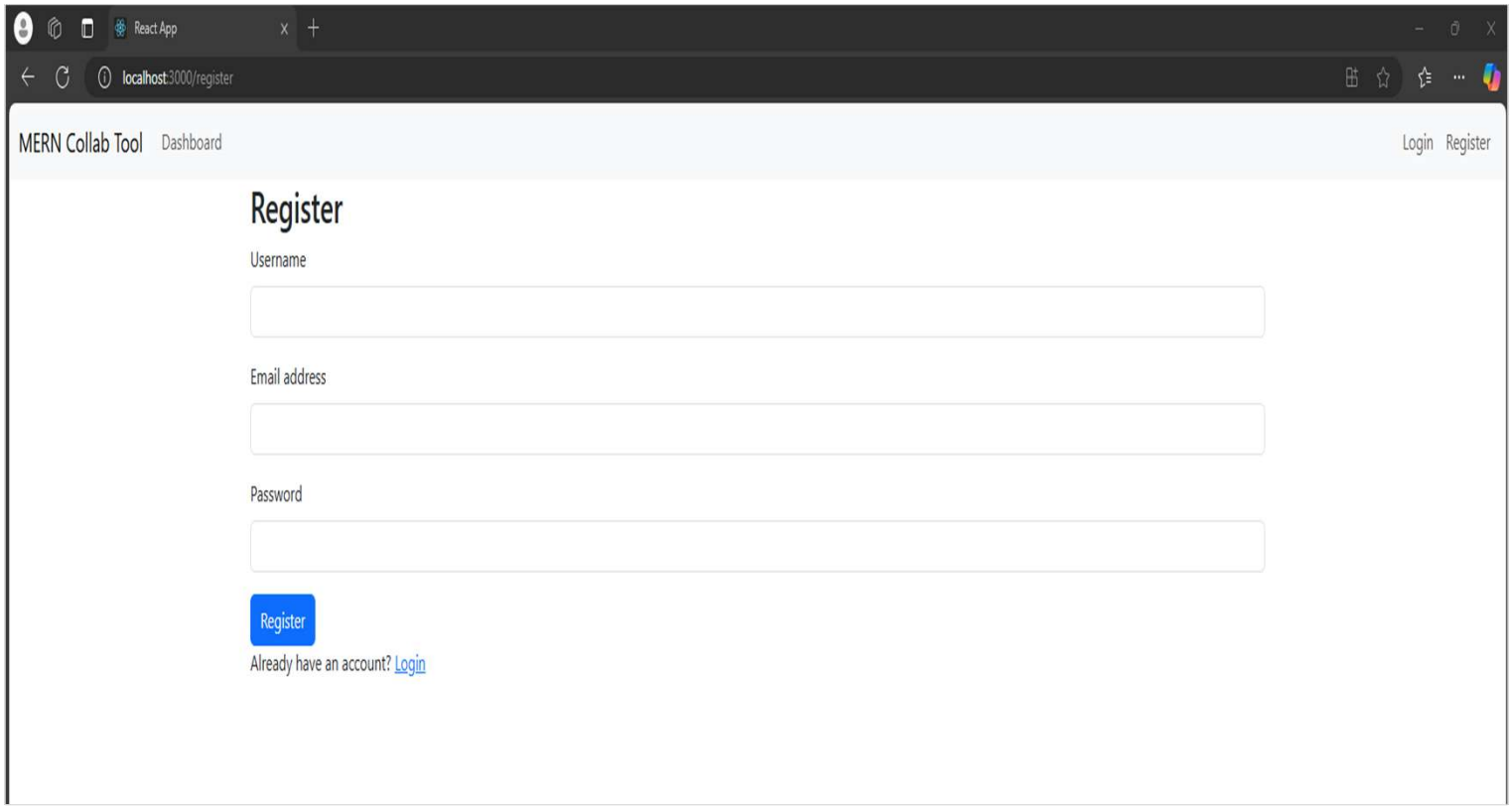
Modelling & Result



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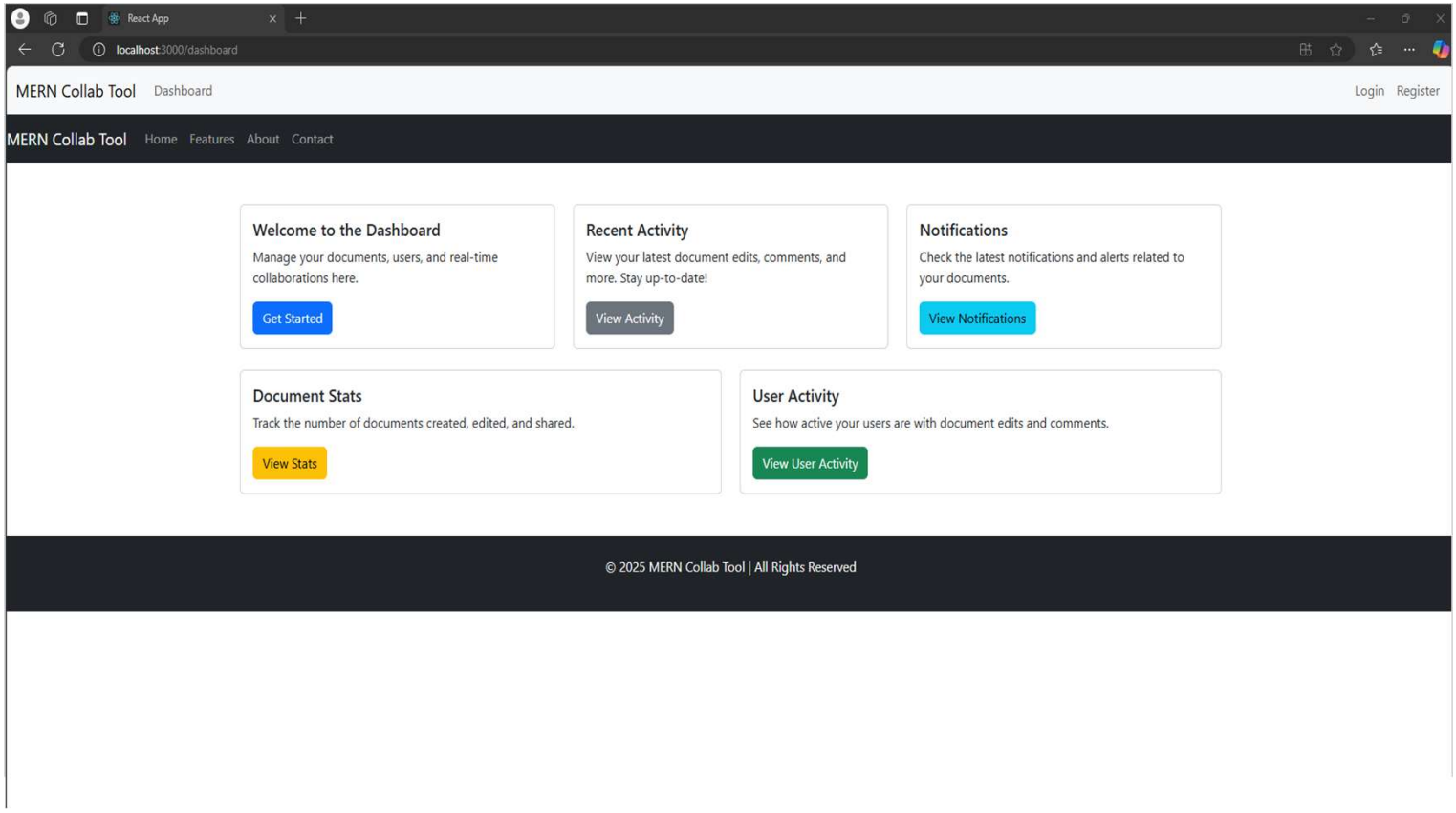
Modelling & Result



Conclusion

- Project enhancements and additional features , such as chat functionality or advanced document collaboration features.
- Explore future improvements for scalability, performance and user experience.

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