Hobbie

Full Stack Development
Capstone Project

A PROJECT REPORT

Submitted by

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CHAPTER 1: INTRODUCTION

1.1 Introduction to Project

In today's rapidly evolving digital landscape, small businesses and individual service providers in the Arts, Entertainment, and Recreation sectors often struggle to reach consumers effectively. Hobbie bridges this gap by providing a unified full-stack web platform that connects consumers with businesses offering recreational, artistic, and creative services.
This capstone project demonstrates comprehensive full-stack development skills encompassing modern frontend and backend technologies, secure authentication, RESTful APIs, and containerized deployment

1.2 Identification of Problem

While large marketplaces and e-commerce platforms dominate product-based interactions, there is a significant lack of specialized platforms that cater to service-based hobbies and recreational activities. Small businesses and independent hobby providers often face challenges such as:

- Limited digital presence and discoverability.
- Absence of secure and user-friendly booking and communication systems.
- Difficulty managing multiple users (business and consumer) within one platform.

The AI Toolbox project addresses these challenges by providing a structured and intelligent discovery platform.

CHAPTER 2: BACKGROUND STUDY

2.1 Existing Solutions

Several existing solutions attempt to address similar domains but remain incomplete or non-specialized:

Facebook Groups / Event Platforms: Provide community interaction but lack structured service listings or authentication systems.

Yelp / Google My Business: Offer general business listings but no service booking or engagement features.

Freelancer / Fiverr: Focus on freelancing rather than recreational or hobby-based services.

Local hobby clubs' websites: Often lack scalability, interactivity, and authentication mechanisms.

These limitations highlight the need for a dedicated, secure, and interactive service-oriented platform designed specifically for arts, entertainment, and recreation businesses.

2.2 Problem Definition

Design and develop a full-stack web application that enables:
Consumers to discover, connect, and engage with local hobby services.
Businesses to register, promote, and manage their hobby offerings.
Secure and scalable authentication, communication, and data management mechanisms.

2.3 Goals/Objectives

The objectives of this project are:

1. Objectives:
   Implement JWT-based authentication and role-based authorization.
   Provide a dynamic user interface for browsing, registration, and profile management.
2. Enable businesses to manage their offers and services efficiently.
3. Implement RESTful APIs for smooth communication between frontend and backend.
4. Support email notifications and secure user verification.
5. Deploy using Docker and provide API documentation via Swagger.
6. Ensure modular, scalable, and maintainable system architecture.

CHAPTER 3: DESIGN FLOW/PROCESS

3.1 Evaluation & Selection of Specifications/Features

The system was developed using modern web technologies such as React.js, Node.js, and MongoDB. The architecture supports scalability, modularity, and real-time updates. Key features include:

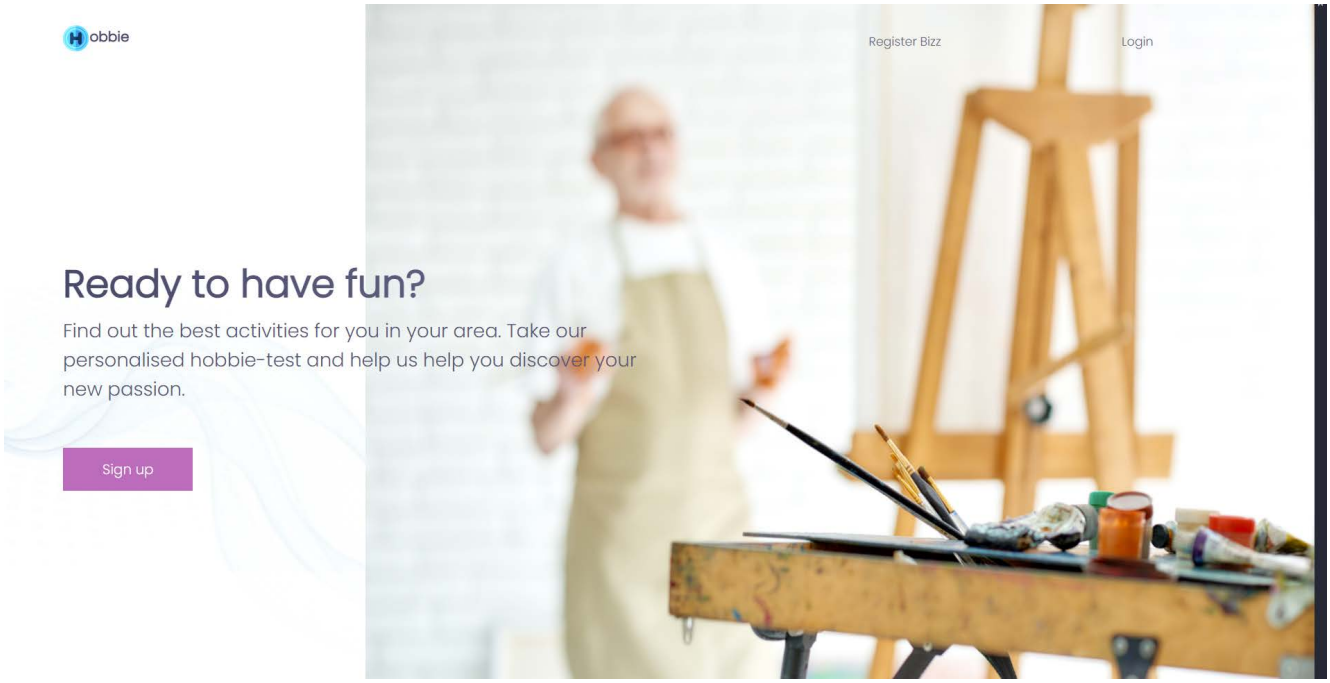
- Categorized listing of AI tools by domain (e.g., writing, design, coding, marketing).
- Search and filter functionalities for efficient navigation.
- Recommendation engine suggesting AI tools based on user intent.
- Tool detail pages with summaries, pros/cons, and direct access links.
- Admin dashboard for tool management and updates

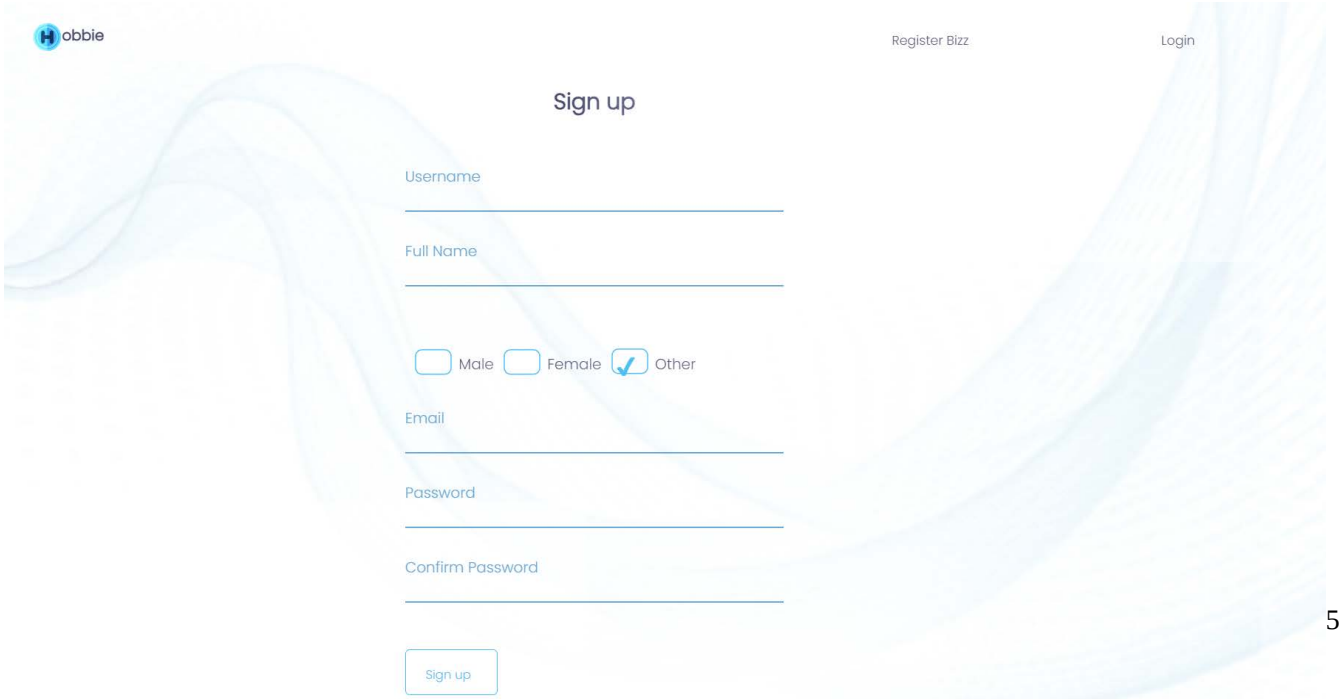
3.2 Analysis of Features and Finalization Subject to Constraints

Constraints considered during development included hosting limitations, time, and data validation needs. To maintain accuracy and efficiency, data ingestion was semi-automated, relying on curated databases. The design emphasized minimalism and clarity to ensure smooth user experience and maintainability.

3.3 Design Flow

1. User Registration/Login: Secure access for personalized experience.
2. Dashboard: User interacts with categorized AI tool listings.
3. Search and Filter: Enables users to locate tools by category, function, or keyword.
4. Recommendation Engine: Suggests tools based on prior selections or search context.
5. Tool Redirection: Directs users to verified external sources for the chosen tool.
6. Admin Panel: Allows administrators to manage and update listings.





CHAPTER 4: RESULTS ANALYSIS AND VALIDATION

4.1 Implementation of Solution

Built using React.js with Axios for API communication and Semantic UI for styling. Authentication tokens are stored securely and managed via Axios interceptors.Developed in Spring Boot, integrating with MySQL via JPA and Hibernate. REST endpoints are documented using Swagger UI.

- Database: Managed by MySQL container orchestrated via Docker Compose.
- Authentication: Implemented using JWT tokens for stateless user sessions.
- Email Services: Configured through Spring Mail for notifications and verification.
- Deployment: Backend containerized and tested locally using Docker; frontend served through Node.js dev server.
- Testing: Unit tests conducted via Jest (frontend) and JUnit (backend).

CHAPTER 5: CONCLUSION AND FUTURE WORK

1.1 Conclusion

The Hobbie project successfully demonstrates a production-ready full-stack web application that integrates modern frontend and backend frameworks to deliver a secure, scalable, and user-friendly platform.
By connecting hobby providers and consumers through an intuitive digital interface, it addresses the critical gap in online service discovery for the Arts and Recreation sector.

1.2 Future Work

Future enhancements may include:

- Integration of AI-based natural language query support.
- User feedback and rating system for continuous improvement.
- Personalized dashboards and tool tracking.
- API integration for automatic tool updates.
- AI-driven summaries and benchmarking across similar tools.