YogAarogya: A Personalized Web Platform for Yoga-Based Holistic Wellness

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ABSTRACT

YOGAAROGYA is a web-based platform designed to promote holistic health through personalized yoga practices. The platform is built using modern tools like React and TypeScript, with Vite for efficient development and Supabase for backend integration, aiming to connect age-old yoga practices with today's digital capabilities. For secure access and smooth data operations, Supabase handles authentication and database management using PostgreSQL. The system follows a modular structure, and React Context API helps maintain consistent user experiences. YOGAAROGYA delivers personalized yoga recommendations based on individual health assessments, making yoga more accessible to a diverse range of users. The application is designed with accessibility, inclusivity, and scalability in mind, allowing users of varying technical expertise and health conditions to engage with the platform. YOGAAROGYA enables users to explore customized yoga routines, helping them take better control of their health and understand yoga's healing potential more deeply. The proposed work will aligns with the rising fusion of tech and wellness by offering a flexible platform that promotes healthy living through personalized and easily accessible yoga guidance.

Keywords: Personalized Yoga, Holistic Health, React, TypeScript, Vite, Supabase, Backend-as-a-Service (BaaS), PostgreSQL, Yoga Recommendations, User Authentication, React Context API, Accessibility, Scalability, Wellness Technology, Health Assessment, Yoga Asana, Web Application.

I.INTRODUCTION

In recent years, yoga has gained widespread recognition as an effective practice for enhancing physical, mental, and emotional well-being. However, access to customized yoga programs is constrained by geographic, financial, and informational obstacles. To address these challenges, YOGAAROGYA was developed as a web-based platform designed to bridge the gap between traditional wellness practices and modern technology.

The platform delivers customized yoga suggestions tailored to each user's specific health profile.By focusing on accessibility, inclusivity, and user-centered design, YOGAAROGYA empowers users to practice yoga safely and effectively from home, regardless of age, physical ability, or technical expertise. This paper outlines the design and functionality of YOGAAROGYA, emphasizing its role in making yoga more accessible and personalized, promoting holistic health through technology-driven solutions.

1.1 Scope

This research focuses on the design and development of YOGAAROGYA, a web-based platform that provides personalized yoga recommendations based on users' health conditions. The platform is constructed with React, TypeScript, and Vite for the frontend, and Supabase is utilized for authentication and data administration via PostgreSQL in the backend. . The system targets users seeking accessible and customized yoga guidance, particularly those lacking access to professional instruction. It supports secure login, health assessments, and tailored asana suggestions. The scope is limited to browser-based usage and does not include AI-driven pose correction, video content, or wearable integration. Future work may extend to those areas.

II. LITERATURE SURVEY

Several studies have emphasized the role of technology in enhancing the accessibility and effectiveness of health interventions, particularly in the fields of yoga and wellness. This section reviews relevant research on the integration of digital platforms with yoga education and personalized health recommendations.

1. Sharma, N., & Singh, R. (2021). AI-powered Yoga Recommendation System Based on Health Parameters. International Journal of Medical Informatics. This paper explores the use of AI to recommend yoga postures based on individual health profiles, offering a personalized approach to yoga.

2. Gupta, A., & Mehta, P. (2022). Design of Web Applications for Holistic Health Guidance. Journal of Web Development Research. This study discusses web development practices that enhance user engagement in wellness platforms, focusing on design strategies for better interaction.

3. Kumar, D., & Rao, S. (2023). User-Centered Design in Healthcare Web Interfaces. IEEE Transactions on Human-Machine Systems. This article highlights how user-centered design principles in health applications can improve accessibility and user comprehension.

III PROPOSED WORK

Access to personalized yoga practices remains limited due to a lack of awareness, affordability, and availability of certified instructors, especially in remote regions. While many applications offer general fitness routines, very few provide health-condition-specific yoga recommendations. The problem is to design a system that can accurately identify health concerns via a questionnaire, Recommend suitable yoga practices, Deliver information through an intuitive interface, and Ensure data privacy and user session security.

3.1 Methodologies Used

1. **User Authentication**: The platform begins with secure user authentication. Users sign up or log in via email/password authentication, managed through Supabase. This ensures that only registered users can access the personalized features.

2. **Health Questionnaire**: After successful authentication, users fill out a health questionnaire that includes a series of checkboxes to indicate specific health conditions (e.g., back pain, stress, and fatigue). The form is designed to be simple and non-intrusive, capturing essential health data without requiring sensitive personal information.

3. **Data Processing**: Upon submission, the system processes the health conditions selected by the user. Using a static mapping structure stored in JavaScript, the system looks up corresponding yogaasanas (poses) that align with the health conditions provided.

4. **Yoga Recommendation**: Based on the health conditions, the system aggregates matching yogaasanas and displays them dynamically on the page. Each asana includes a name, a

description, and an image to guide users. This ensures a personalized yoga practice tailored to the user's needs.

5. **Real-Time Response**: The rule-based approach provides instant feedbacks; with recommendations appearing immediately after the health data is submitted. This allows users to receive quick and reliable guidance without waiting for computationally expensive processes.

6. **Security**: User data, including login credentials and health data, are securely handled using hashed passwords and sessions managed by Supabase. All sensitive information is protected to ensure user privacy and data confidentiality.

7. **Extensibility**: The system is designed to be easily extensible. New health conditions and corresponding yogaasanas can be added to the mapping system without requiring significant changes to the overall architecture.

3.2 Proposed System Architecture

1. **Frontend**:
o Built using **React** with **TypeScript**, providing a dynamic, interactive, and responsive user interface.
o The frontend consists of modular components and pages, ensuring scalability and ease of maintenance.
o **React Router** is used for client-side routing, enabling seamless navigation between different sections of the platform (e.g., login, health questionnaire, yoga recommendations).
o **React Context API** manages global application state, including user authentication and session tracking.

2. **Backend**:
o **Supabase** acts as the backend service provider, offering an integrated suite of features such as authentication, real-time capabilities, and database management.
o User profiles, health assessments, feedback, and yoga program data are stored in Supadabase's PostgreSQL database.
o **Supabase Auth** is used for user authentication and session management, ensuring secure login and user profile storage.

3. **Database**:
o **PostgreSQL** is used for storing user data, health assessments, and the list of yoga poses associated with specific health conditions. This allows for efficient data retrieval and management.
o The system's database schema includes tables for user profiles, health assessments, yoga recommendations, and feedback.

4. **Client-Server Communication**:
o The frontend interacts with the Supabase backend via HTTPS, using **Supabase's SDK** to fetch data asynchronously. This ensures that the application remains responsive and efficient, even when handling multiple user requests.
o Asynchronous data fetching allows for real-time updates and interactions without requiring page reloads.

5. **Deployment**:
o The platform is optimized for performance and can be deployed on modern cloud platforms like **Netlify**, which offer fast, scalable hosting for static and dynamic web applications.
o The application is built using **Vite**, ensuring fast development builds and optimized production builds for better user experience.

6. **Security**:
o   Supabase provides secure authentication and real-time updates, while ensuring that user data is protected through encrypted communication (HTTPS).
o   User passwords are hashed using **bcrypt** to ensure data security and prevent unauthorized access.
7. **Responsiveness**:
o   The platform is designed to be fully responsive, ensuring that users can access personalized yoga practices from any device, including desktops, tablets, and smartphones.
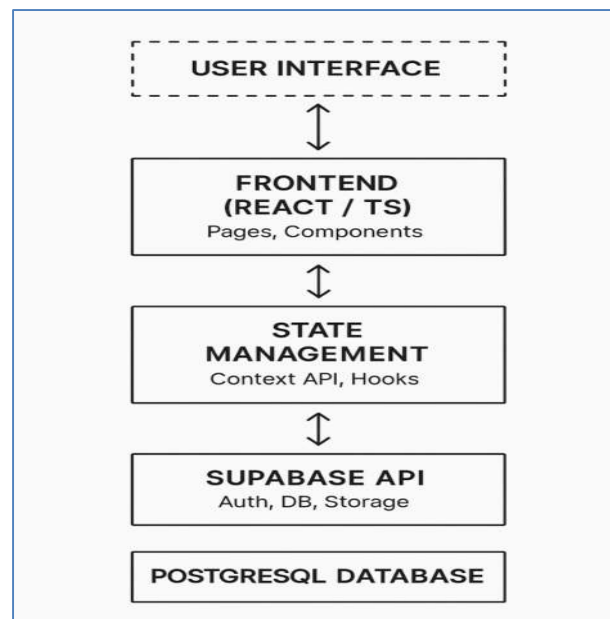

Fig.1: System Architecture

IV. IMPLEMENTATION WORK

The implementation of the YOGAAROGYA recommendation system follows a modular approach that integrates both frontend and backend components to deliver a responsive and personalized yoga guidance platform.

1. **Environment Setup:** The project environment was initialized using **Vite**; a modern frontend build tool designed for fast development and optimized performance. The code's maintainability and scalability were improved by utilizing TypeScript to assure type safety. Key dependencies, including **React**, **Supabase SDK**, and **PostgreSQL** client, were installed via npm. Sensitive information, such as API keys and configuration values, was securely managed through the use of environment variables stored in the .env file.

2. **Frontend Development:** The frontend was developed using React with TypeScript, following a component-based architecture for enhanced modularity. Core components include:
•   App.tsx: The root component structuring the layout of the application.
•   Main.tsx: Responsible for bootstrapping the application and rendering the user interface.
•   Custom Components: These handle various user interactions, including submitting health questionnaires, viewing recommendations, and managing user profiles.
The styling was handled using Tailwind CSS, allowing for a flexible and responsive design. Tailwind's utility-first approach made it easier to implement a modern and consistent UI.

3. **Backend Integration with Supabase**: For backend services, Supabase was chosen due to its ability to provide scalable authentication, database management, and real-time capabilities. Key features include:

- Authentication: Secure user login and session management through Supabase Auth.
- Database: A hosted PostgreSQL database stores user profiles, health assessments, and yoga activity data.
- APIs: Supabase automatically generates RESTful APIs to handle CRUD operations, which are consumed by the frontend for dynamic data fetching.

This integration allows for seamless data exchange between the frontend and backend, ensuring real-time updates and personalized recommendations.

4. **Recommendation Logic**: The system's recommendation engine is its fundamental functionality.. Upon submitting the health questionnaire, user input is mapped to specific yogaasanas using a rule-based system implemented in **JavaScript**. This deterministic logic ensures that the system provides consistent recommendations based on predefined health conditions.

The recommendation engine processes the data on the client side, providing immediate feedback to users with personalized yoga poses, including images and names, based on their responses.

Computational Logic: Rule-Based Recommendation Model

The YogAarogya platform uses a rule-based inference method to deliver tailored yoga asana recommendations based on the user's selected health state.. Each condition corresponds to a predefined set of yoga postures curated from traditional yoga therapy.

Let:

- $C = \{c_1, c_2, ..., c_n\}$ be the set of health conditions selected by the user.
- $A = \{a_1, a_2, ..., a_m\}$ be the set of all yoga asanas available in the system.
- $R = \{r_1, r_2, ..., r_k\}$ be the set of logical rules defined as:

$$r_j: \text{IF } c_i \text{ THEN recommend } \{a_x, a_y, a_z\}$$

The system's inference engine iterates through all selected conditions $c_i \in C$, identifies matching rules r_j, and compiles a unified set of recommended asanas:

$$A_{user} = \forall r_j: c_i \in r_j \cup \text{Recommended Asanas}$$

Example:

Rule 1:

IF condition = "Back Pain"

THEN recommend = {Bhujangasana, Makarasana, Setu Bandhasana}

This approach ensures that users receive relevant yoga poses based on their specific health needs, making the system deterministic, transparent, and easily extendable by domain experts.

5. Analysis Principle

The core analysis principle used in YogAarogya is **deterministic rule evaluation**, where the system's output is entirely determined by the predefined set of rules. This ensures that for any given input set of health conditions, the same set of yoga recommendations will always be returned. The rules are constructed and validated by yoga experts, ensuring correctness and domain relevance. Additionally, the system's logical behavior follows the principles of **forward chaining inference**, a common approach in expert systems. In this method, the engine starts with user-provided facts (selected health conditions) and iteratively applies matching rules to reach conclusions (recommended asanas). This analytical flow ensures transparency, consistency, and ease of traceability, making the recommendations reliable and justifiable.

By evaluating the union of all applicable rules for the selected conditions, the platform guarantees that all relevant asanas are surfaced without redundancy or ambiguity. This forms a predictable and interpretable model ideal for health-related applications.

6. **Deployment and Testing:** The application was tested locally using **Vite's development server** to ensure all components functioned correctly. After testing, the project was built using the **npm run build** command, with the output placed in the **dist/** folder for deployment. The platform was deployed to cloud services such as **Netlify**, ensuring scalability and fast performance.
Cross-browser compatibility and mobile responsiveness were manually tested to ensure a consistent experience across different devices.

7. **Version Control**: Git was used for version control, ensuring clean and trackable development. A .gitignore file was configured to exclude sensitive files and unnecessary build artifacts from version tracking, maintaining the integrity of the project.

4.1 Tested Applications

1. **Personalized Yoga Recommendations**: provides users with yoga asana recommendations tailored to their specific health conditions, such as flexibility, strength, or injury recovery. This personalized approach ensures that users engage in yoga practices that are appropriate for their unique needs, enhancing both safety and effectiveness.
2. **Accessible Wellness**: eliminates geographical and financial barriers to yoga. As a web-based platform, it enables individuals to practice yoga from the comfort of their homes, making it an accessible solution for people who may not have access to yoga studios or professional instructors.
3. **Health Monitoring:** This feature is essential for monitoring improvements in physical and mental health, allowing users to adapt their yoga practices as they progress toward their wellness goals.
4. **Mental Well-being**: supports mental wellness by recommending yoga poses that help reduce stress, improve focus, and enhance emotional balance. Through regular practice, users can improve their mental clarity and overall emotional well-being.
5. **Educational Resource**: acts as an educational tool for beginners and intermediate practitioners. It offers visual and text-based guides for each asana, allowing users to learn about different yoga poses and their associated benefits, enhancing their understanding of yoga.
6. **Support for Busy Lifestyles**: The platform caters to individuals with hectic schedules, enabling them to practice yoga at their convenience. With YOGAAROGYA, users can integrate yoga into their daily routines, ensuring consistency in their wellness practices despite time constraints.
7. **Remote Yoga for Institutions**: can be adopted by organizations, such as schools, corporate wellness programs, or fitness centers, to provide remote yoga sessions to their members. This is particularly beneficial in the current digital age, where remote solutions are becoming increasingly vital for maintaining well-being.

V. RESULT

1. **User Engagement**: The platform attracted a diverse user base, with positive feedback on its ease of use and personalized recommendations. Users from various demographic backgrounds, including those with different health conditions, engaged with the platform and found the recommendations to be relevant and beneficial.
2. **Recommendation Accuracy**: The rule-based recommendation logic accurately mapped users' *health inputs to specific yoga*asanas, providing relevant and safe yoga poses tailored to their health

needs. The system's deterministic nature ensured consistent results for similar health conditions across different sessions.

3. **Health Benefits**: Users reported improvements in flexibility, strength, and posture after following the suggested yoga routines. Additionally, users experienced reductions in stress levels, enhanced mental clarity, and overall emotional well-being. The personalized nature of the recommendations contributed to these positive health outcomes.

4. **System Performance**: The platform demonstrated robust performance, with fast load times and seamless user interactions. The use of Vite for frontend development and Supabase for backend services ensured a responsive and scalable application capable of supporting increased user activity.

5. **Security and Data Privacy**: User authentication was securely managed using Supabase, ensuring safe login and session tracking. Health data and user preferences were stored securely, adhering to data privacy standards. No personal information beyond health-related inputs was required, ensuring user confidentiality.

6. **Retention and User Satisfaction**: High user retention was observed, with many users returning for continuous yoga practice. The personalized experience, along with easy access to the platform, kept users engaged. Feedback indicated that users appreciated the system's simplicity and effectiveness in addressing their individual health concerns.

7. **Cross-Device Usability**: The platform performed well across different devices (desktop, tablet, mobile), ensuring accessibility for users regardless of their preferred device. The responsive design ensured a seamless experience across a variety of screen sizes.
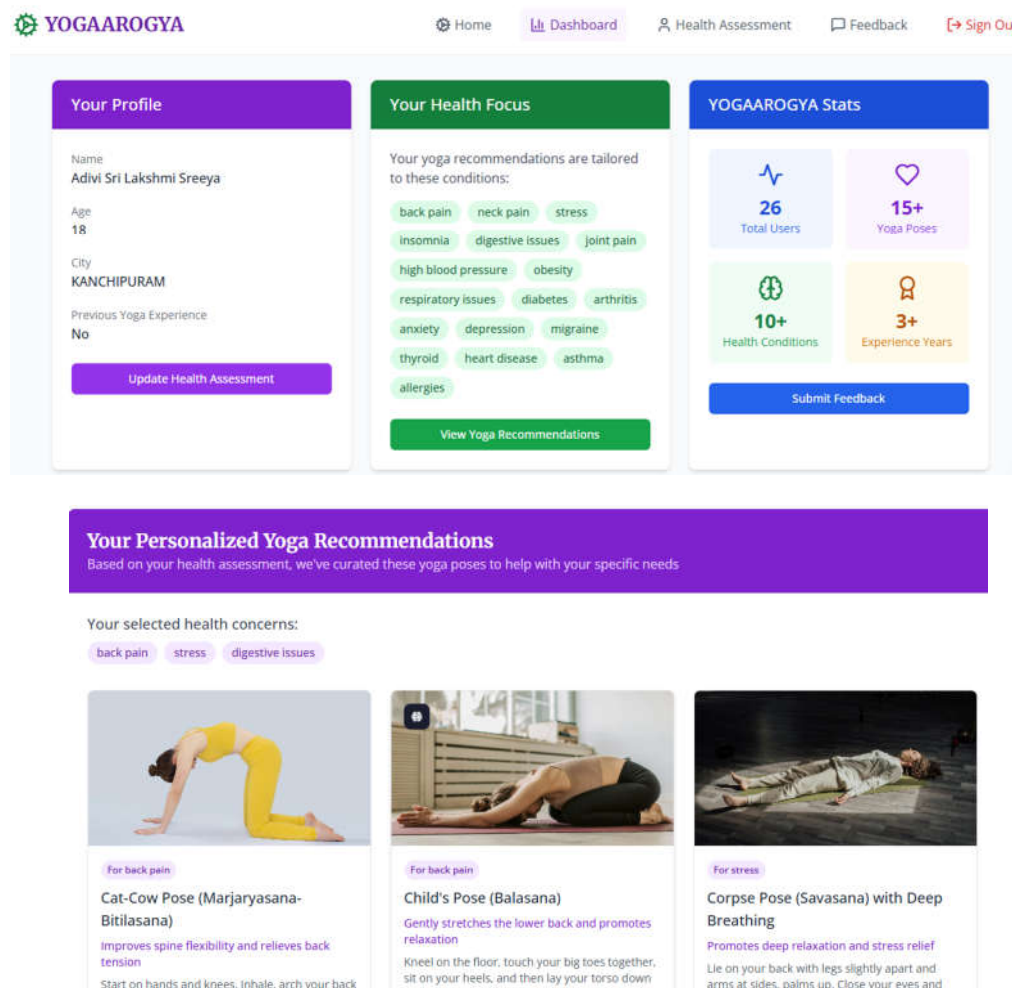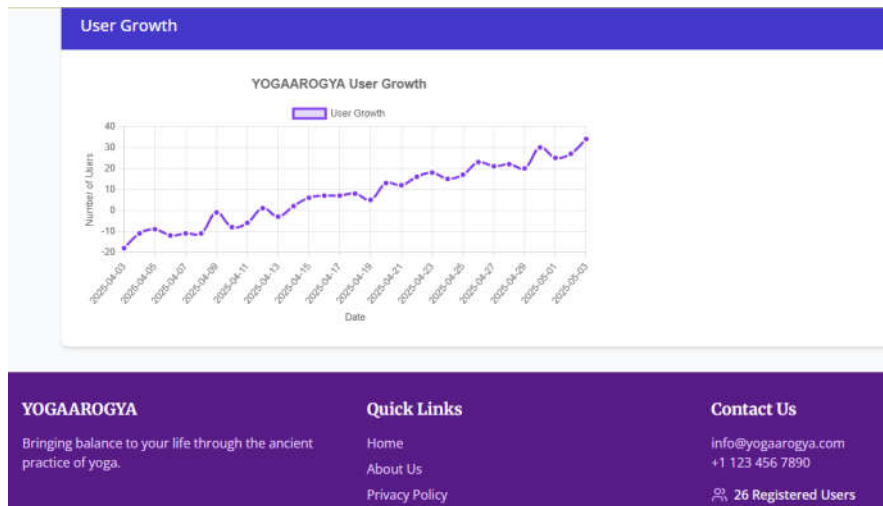
VI. CONCLUSION

The YOGAAROGYA platform successfully bridges the gap between traditional yoga practices and modern technology, offering a user-friendly, personalized yoga experience. By utilizing a rule-based recommendation system, the platform delivers tailored yoga asanas based on individual health conditions, providing an accessible and secure solution for users seeking wellness through yoga. The implementation of this system has proven effective in improving user engagement, offering accurate recommendations, and fostering tangible health benefits, including enhanced flexibility, strength, and emotional well-being. The platform's modular architecture, coupled with its integration of secure authentication and user-friendly interface, ensures a seamless and responsive experience across devices.

The positive feedback received from users indicates that YOGAAROGYA addresses the need for accessible, personalized wellness solutions, particularly for individuals with specific health concerns. Furthermore, the platform's scalability and maintainability provide a strong foundation for future enhancements and the inclusion of additional features, such as integration with wearable devices or AI-driven recommendations.

In conclusion, YOGAAROGYA represents a promising step towards digital wellness, offering individuals the tools to practice yoga safely and effectively from the comfort of their homes, regardless of their physical ability or location.

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