Health Cure by Yoga – An AI-Enhanced Android Platform for Personalized Wellness

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Abstract- With growing work stress, mental illness, and physical unease in contemporary life, people are increasingly seeking affordable, non-invasive health management methods such as yoga. Yet most of the present yoga apps provide generalized routine with no personalization or medical prudence. Our third-year B.Tech project, "Health Cure by Yoga," is a mobile Android application wherein users can enter their respective health issues like stress, anxiety, back pain, or neck pain and get edited yoga asanas that will provide relief. The app provides clear instructions on doing each asana, benefits, disadvantages, and precautions. There is also a plan generator option for regular practice and monitoring progress. This research paper outlines the motivation, design process, attributes, and impacts of our mobile app solution for increasing the personalized, informed, and accessible nature of yoga-based self-care.

Index Terms— Yoga therapy, mHealth, Android, Firebase, Personalized health applications, Stress management, Mobile wellness

I. INTRODUCTION

The health and well-being solutions demand has really picked up in recent decades. Yoga, a centuries-old technique renowned for its physical, mental, as well as spiritual advantages, is now widely recognized as a worthwhile tool for coping with the everyday problems of anxiety, body pain, and back pain. Nevertheless, as popular as yoga happens to be, few know exactly which asanas are appropriate for their ailment. Here again, technology helps fill in the gap.

Our "Health Cure by Yoga" app is meant to serve as a personal yoga guide. It is different from ordinary fitness apps because it assists users in choosing asanas according to their specific health issues. For instance, a person suffering from a sore neck can search on the app and obtain specific suggestions along with teaching instructions. The app not only imparts the proper posture and technique but also outlines benefits, drawbacks, and precautions to avoid accidents and ensure proper practice.

The combination of ancient yoga wisdom with contemporary technology provides an open platform for people to find relief from everyday complaints. By targeting specific health issues instead of overall fitness, our app addresses a significant gap in the mobile wellness space.

II. PROBLEM STATEMENT

Although yoga is beneficial, all individuals do not know how to practice it properly and safely in accordance with their health status. Conventional yoga classes or programs are usually missing customization, medical applicability, or planning tools. There exists a requirement for a simple mobile platform that serves this purpose by providing yoga guidance related to an individual's physical or emotional issue.
The issues in current yoga applications are as follows:
1. Limited personalization for individual health conditions
2. Inadequate information regarding precautions and contraindications
3. Lack of planning features for regular practice
4. Lack of adequate information regarding proper performance of asanas
5. No provision to monitor progress or get feedback

These shortcomings may result in incorrect practice, possible injury, or quitting yoga practice altogether. Our project will overcome these issues with a holistic, easy-to-use mobile solution.

III. LITERATURE REVIEW

Some studies point to the efficacy of yoga in curing mental and physical diseases. WHO reports that musculoskeletal pain and stress are some of the leading causes of lost productivity globally. Yoga has been shown to decrease cortisol levels (stress hormone), enhance flexibility, and promote musculoskeletal well-being. This notwithstanding, most mobile health applications currently available are centered on fitness objectives instead of symptom-based well-being.

Daily Yoga, Yoga for Beginners, and Asana Rebel provide guided videos but no customization towards individual health conditions. None provide full precautions or the feature of planning sessions based on user requirements. Our app fills this need by combining handpicked recommendations and personalized guidance.

Research conducted by the National Institute of Health has revealed that chronic pain can be lowered by 30% due to regular practice of yoga by enhanced flexibility and stress relief [1]. Evidence published in the Journal of Clinical Psychology has indicated that mindfulness-based yoga practices are able to lower symptoms of anxiety by 23% over control groups [2].

A 2023 market report unveiled that although health application downloads make up 30% of total fitness app downloads, only 8% have condition-specific instruction [3]. In addition, user retention among generic yoga applications falls to 15% by three months, whereas apps featuring personalized programs sustain retention rates around 42% [3].

IV. OBJECTIVES

The major objectives of this project are:

1. To create a friendly Android application providing yoga-based solutions for common health issues.
2. To create a searchable database of asanas divided on the basis of symptoms like stress, anxiety, back pain, etc.
3. To provide extensive instructional material with steps, images, benefits, disadvantages, and cautions.
4. To enable users to create daily yoga schedules for regular practice.
5. To encourage regular use through reminder messages.
6. In order to make the application available for users with all levels of yoga experience.
7. To incorporate evidence-based yoga therapy methods in a digital platform.

V. SYSTEM ARCHITECTURE

The application is divided into the following layers:

A. User Interface Layer

• Developed with Android XML using intuitive navigation and visual cues
• Applies Material Design principles for a contemporary, clean look and feel
• Has responsive layouts for different device sizes
• Has accessibility features for all user needs

B. Application Logic Layer

• Manages user inputs, search queries, and asana suggestions
• Executes the business logic for plan creation and scheduling
• Processes data validation and handling
• Manages application flow and state management

C. Database Layer

• Saves asana data, user data, and custom plan settings
• Executes SQLite for local storage and Firebase for cloud syncing
• Guarantees data integrity and efficient access patterns
• Executes backup and recovery processes

D. Notification Module

• Sends push notifications for reminders, tips, and wellness advice
• Manages scheduling and frequency of alerts
• Offers customizable notification options
• Enforces engagement methods for consistent practice

VI. IMPLEMENTATION DETAILS

The flow of application starts with user login. After logging in, users are presented with a dashboard that has a search bar and categorized problems. After typing in their health issue, the corresponding asanas are retrieved from the database. Every result contains:

• Image of the posture
• Name in Sanskrit and English
• Purpose of the asana

• Step-by-step explanation
• Advantages & disadvantages
• Medical precautions (e.g., "Avoid if pregnant" or "Not for hernia")
The "Add to Plan" button allows adding it to a daily plan. The plan view lists all chosen poses and provides "Start Practice" functionality, which may include the integration of a timer and a progress bar.

A. Database Schema
The program employs a relational database structure with the following major entities:
1. Users: User authentication and profile information
2. Asanas: Holds data for every yoga pose
3. HealthIssues: Lists typical health issues
4. AsanaIssueMapping: Maps asanas to associated health benefits
5. UserPlans: Saves user-composed practice routines
6. UserProgress: Saves practice history and feedback

B. Asana Recommendation Algorithm
The system relies on a weighted match algorithm that takes into account:
1. Primary health concern (heaviest weight)
2. User experience level
3. Past user feedback regarding similar concerns
4. Complementary poses for balanced practice
5. Contraindications from user health profile

Algorithm 1: Asana Recommendation Algorithm
Input: userHealthConcern, userExperienceLevel, userHealthProfile
Output: recommendedAsanas[]
1: Initialize recommendedAsanas[] = empty
2: concernRelatedAsanas[] = fetchAsanasByHealthConcern(userHealthConcern)
3: for each asana in concernRelatedAsanas do
4: score = calculateBaseScore(asana, userHealthConcern)
5: if checkContraindications(asana, userHealthProfile) then
6: go to next asana
7: end if
8: score += adjustForExperience(asana, userExperienceLevel)
9: score += getFeedbackScore(asana, userHealthConcern)
10: addToRecommendations(recommendedAsanas, asana, score)
11: end for
12: sortByScore(recommendedAsanas)
13: return recommendedAsanas

C. Technologies Used
1.Frontend Development
- Progamming Language: React Native
- UI Framework: Android XML, Material Design Components
- Image Handling: Glide library for image loading and caching efficiently
- UI Components: RecyclerView, CardView, ConstraintLayout
- Animation: Motion Layout for seamless transitions

2. Backend Integration
- DATABASE: Firebase Realtime Database for cloud storage
- Local Storage: SQLite for offline support
- Authentication: Firebase Authentication for secure user authentication
- Cloud Functions: For server-side operations and notifications

3. Development Tools
- *IDE: Android Studio*
- *Version Control: Git/GitHub*
- *Testing: JUnit, Espresso for UI testing*
- *Analytics: Firebase Analytics for usage analysis*
- *Crash Reporting: Firebase Crashlytics*

VII. FEATURES AND FUNCTIONALITIES

A. User Registration & Login
• Secure sign-up with email/password or social media login
• Basic health profile setup
• Controls and options for data management and privacy

B. Search by Symptom
• Clean search interface for health issues
• Organized browsing categories (mental, physical, spiritual)
• Intelligent suggestions based on usual conditions
• Filtering by difficulty level, length, and position type

C. Asana Details Page
• High-quality photos demonstrating correct pose execution
• Instructional steps with highlighting key alignment points
• Benefits explanation with scientific evidence where available
•Clear warnings and precautions with constrictions
•Ability level modifications for varying skills
•User feedback and rating system

D. Plan Creation Tool
• Drag-and-drop plan creation feature
• Time estimate of total practice
• Difficulty estimation of chosen combination
• Facility to save multiple plans for various uses
• Share ability for plans (export as PDF or link)

E. Daily Reminders
• Schedule for notifications that can be customized
• Health facts with motivational messages
• Streak tracking and progress updates
• Smart timing aligned with user patterns

F. Feedback System
• Mechanism for rating individual plans and poses
• Tracking of symptom improvement
•Practice consistency measurement
• Progression suggestions based on user history

VIII. RESULTS AND OUTCOMES

Early trials of the "Health Cure by Yoga" app have indicated encouraging outcomes:
• 89% of trial users were able to find condition-specific yoga information more easily than general yoga information
• Scheduling and reminder features encouraged regular practice, with 67% of users practicing more often
• Visual step-by-step guides and precaution tips helped beginner users most, with 92% of users reporting increased confidence in trying new poses
• Feedback revealed heightened awareness of yoga benefits and risks, with 78% of users reporting learning new information on pose contraindications
A. User Satisfaction Metrics
During beta testing with 50 users over 30 days:
• Overall satisfaction rating: 4.6/5
• Ease of use rating: 4.8/5
• Usefulness of recommendations: 4.3/5
• Quality of instructional content: 4.7/5
• Likelihood to continue using: 88%
B. Health Impact Assessment
Early self-reported results from test users:
• 65% reported some improvement in their main health concern
• 73% said lower stress
• 58% mentioned better sleep quality
• 47% felt less intense pain

IX. ADVANTAGES AND LIMITATIONS

A. Benefits:
• Personalized user experience dependent on health requirements
• Educational value with transparent asana analysis
• Daily tracking enhances wellness consistency
• Simple interface with contemporary UI
• Saved plans available offline
• Evidence-based suggestions
• Multi-level method appropriate for novices to advanced practitioners

B. Shortcomings:
• No real-time pose correction
• Cannot serve as a substitute for professional medical guidance
• Some content is static and must be manually Updated.
• Limited to pre-programmed ailments
• Dependent on user self-reporting for tracking of progress
• Database completeness reliant on manual curation

X. FUTURE PROSPECTS

The "Health Cure by Yoga" application has huge potential for growth and development:
A. Technical Improvements
• Incorporation of AI to offer auto-pose recommendations
• Real-time posture detection through device camera
• Machine learning for personalized progression paths
• Cross-platform development (iOS, web app)
B. Content Development
• Offline mode for remote usage
• Multilingual and voice-assisted versions

• Adding videos and interactive tutorials
• Integration with wearable devices to offer biometric feedback
• Extended database of asanas and illnesses
• Guided meditation and pranayama modules

C. Community Features

• Support forums for discussions and guidance
• Certified instructor connections
• Live class integration
• Sharing of progress and social support

XI. CONCLUSION

"Health Cure by Yoga" is a novel approach in taking old-style yoga into the digital world for individualized health care. Through the synergy of yoga wisdom and new mobile technology, we provide users with a safe and organized means to treat common complaints. The app enables users to take charge of their well-being through educated practice, and holds promise for broad social reach in preventive health promotion.

The project illustrates the way technology can bring conventional well-being practices to everyone, personalized to their specific needs, and made more impactful. With our symptom-based approach, detailed guidance, and planning tools, we've developed an online companion that assists users along the path of improved health via yoga.

As yoga becomes more recognized for its medicinal virtues, users like us will play a greater part in bringing these practices into the mainstream while preserving safety and efficacy. The "Health Cure by Yoga" app marks an important step forward in democratizing wellness information and having self-care available to all.

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