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Smart Greenspoon with Integrated AI Algorithm

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***Abstract* - Artificial intelligence is rapidly reshaping how traditional knowledge systems are digitized and delivered at scale. Ayurveda, with its holistic, personalized approach to wellness, becomes even more powerful when paired with modern data-driven intelligence. GreenspoonAI is a cross-platform Ayurvedic wellness ecosystem built with React Native, FastAPI, Firebase, and OpenAI models to deliver adaptive dietary and lifestyle guidance. The system aggregates Panchang insights, real-time weather, and user-specific factors (dosha, goals, age, medical history, allergies) to generate daily personalized routines. The mobile app features eleven interactive screens with reusable UI, Firestore live syncing, and parallelized backend context processing for faster plan generation. The platform achieves sub-200 ms state updates, a 60% faster schedule-generation pipeline, and 95% code reuse across Android, iOS, and web demonstrating how ancient Ayurvedic principles can be operationalized into a scalable, intelligent wellness product ready for case studies and clinical validation.**

Keywords: Artificial Intelligence (AI), Generative Pre-trained Transformer 3.5 (GPT-3.5) Fast Application Programming Interface (FastAPI)
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INTRODUCTION:

In today's era, people are increasingly turning towards natural and holistic ways to care for their health and wellbeing. Ayurveda, with its deep-rooted wisdom, offers personalized guidance based on an individual's body type, daily rhythm, and environment. GreenSpoonAI brings this ancient knowledge into modern everyday life by offering simple, tailored routines that anyone can follow. The platform looks at factors like the day's Panchang, local weather, and personal wellness goals to create balanced meal plans, yoga suggestions, and lifestyle habits. Users receive daily recommendations that feel natural, culturally relevant, and easy to apply. By blending tradition with intelligent automation, GreenSpoonAI makes holistic wellness accessible, practical, and consistent for people of all lifestyles.

LITERATURE SURVEY:

*Srishti Shaumya and Rameshwar Kumar, Artificial Intelligence in Ayurveda: A Systematic, Review (2020-2025)*Shaumya and Kumar (2020–2025) conducted a systematic review of 68 studies across PubMed, Scopus, Web of Science, and AYUSH databases, including 32 for qualitative synthesis, with data extracted on study type, AI method, and Ayurvedic application; results showed that AI methodologies such as machine learning, neural networks, and NLP were applied across Ayurvedic domains, achieving 90-95% accuracy in Prakriti analysis using biometric data, images, or questionnaires, modernizing Nadi Pariksha through IoT and ML for pulse waveform analysis, enabling AI-based clinical decision support systems to predict conditions like gestational diabetes and suggest Ayurvedic management, and identifying 17 antibacterial herbs from classical formulations, while no clinical studies on AI-Panchakarma optimization were found though conceptual frameworks exist, and additional applications included telemedicine for monitoring vitals and Dosha levels as well as Ayurgenomics correlating phenotypes with genomic markers; the study concluded that AI is enhancing Ayurveda in constitution analysis, diagnosis, and herbal research but faces limitations such as small-scale studies, lack of randomized controlled trials, and data standardization, with future work requiring large-scale validation, integration of Ayurgenomics, and ethical AI frameworks to ensure scientific rigor while preserving Ayurveda's individualized, holistic essence.

*Jadhav Vikas S1, Wakale Ashwini D2, and Mane SR3, Integration of machine learning in Ayurveda: An Indian traditional health science Int. Res. J. of Science & Engineering, Special Issue A14, June, 2024.*Jadhav, Wakale, and Mane (2024) conducted a literature review on the integration of machine learning (ML) techniques in Ayurveda, categorizing approaches into supervised, unsupervised,

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semi-supervised, and reinforcement learning, and analyzing algorithms such as regression, decision trees, random forest, SVM, KNN, Naive Bayes, gradient boosting, PCA, neural networks, RNN, and LSTM; applications explored included text mining of Ayurvedic Samhitas, personalized medicine recommendations based on Prakriti and health conditions, disease prediction using dosha imbalances and lifestyle data, clinical decision support systems (CDSS), quality control and authentication of herbal medicines through image recognition and spectroscopy, and public health surveillance, with results confirming ML's utility in diagnostics, treatment personalization, constituent balancing, herb analysis, and epidemiological monitoring, though challenges in dataset size and validation persist; the study concluded that ML can synergize ancient Ayurvedic wisdom with modern computational methods, but successful adoption requires interdisciplinary collaboration, cultural acceptance, and ethical safeguards, with rigorous validation needed to ensure responsible integration and advancement of personalized medicine.

Johnson Oyeniyi, The role of AI and mobile apps in patient-centric healthcare delivery, World Journal of Advanced Research and Reviews, 2024. conducted a review on the integration of artificial intelligence (AI) and mobile health applications (mHealth) in patient-centric healthcare, using a literature search of publications up to 2024 with search terms combining AI concepts such as predictive analytics, image recognition, natural language processing, and machine learning with healthcare delivery terms including patient-centric care, mobile apps, telemedicine, and remote monitoring; studies were screened for relevance, and data extracted covered study type, AI technique, mobile app functionality, and healthcare application domain, with applications explored in predictive analytics for disease management, image recognition in diagnostics, NLP for communication, mobile apps for remote monitoring, telemedicine, and personalized health management, while ethical considerations such as bias, privacy, security, and transparency were included; results showed AI and mobile apps significantly contributed to patient-centric care through virtual health assistants, remote monitoring via wearables and IoT, predictive analytics for high-risk patients, improved diagnostic accuracy, enhanced patient-provider communication, real-time tracking of vitals and adherence, and expanded telemedicine access, though challenges in data security, interoperability, and equitable access remained; the study concluded that AI and mobile apps are transforming healthcare into a patient-centric model by improving personalization, engagement, diagnosis, and treatment planning, but emphasized the need to address ethical challenges, digital literacy, and large-scale validation, with future directions focusing on responsible implementation, equitable access, and integration of digital literacy initiatives to ensure secure and inclusive healthcare delivery.

*Dr. Umadevi Ramamoorthy, Applications of AI in Healthcare and Medicine IJARIIE- 2025.*Umadevi Ramamoorthy (2025) conducted a literature-based review using PubMed, IEEE Xplore, and Google Scholar for publications between 2018 and 2025, with search terms combining AI concepts such as machine learning, deep learning, convolutional neural networks, natural language processing, and explainable AI with healthcare domains including medical imaging, predictive analytics, drug discovery, robotic surgery, and hospital management; studies were screened for relevance, and data extracted covered study design, AI methodology, application domain, and performance outcomes, while ethical and technical challenges such as bias, privacy, and transparency were qualitatively assessed; results showed AI contributing significantly across healthcare domains, with CNN-based imaging improving diagnostic accuracy for cancer, pneumonia, and stroke, predictive models enhancing decision-making through electronic health records, AI accelerating drug discovery by predicting compounds and optimizing trials, personalized medicine benefiting from targeted therapy recommendations in oncology and cardiology, robotic surgeries increasing precision and reducing recovery times, and NLP streamlining administrative tasks, alongside novel applications such as AI-powered mobile apps for biomechanics and GPT-based analysis of historical medical texts; despite these advances, challenges of bias, transparency, and privacy persisted, with explainable AI emerging as a potential solution, and the study concluded that AI is reshaping healthcare by improving diagnostics, predictive analytics, treatment personalization, and efficiency, but requires robust frameworks, inclusive datasets, and interdisciplinary collaboration to ensure accuracy, transparency, and equity in clinical practice.

RESEARCH METHODOLOGY:

The methodology of GreenSpoonAI integrates contextual data aggregation, personalized routine generation, and adaptive feedback. User onboarding collects lifestyle and wellness inputs, after which the system evaluates scheduling needs. Panchang data, weather information, and personal health details are aggregated and processed by the AI model to generate tailored daily routines. These routines are stored and synced via Firebase, while user interactions such as marking meals completed feed back into the system, enabling continuous refinement of the wellness experience

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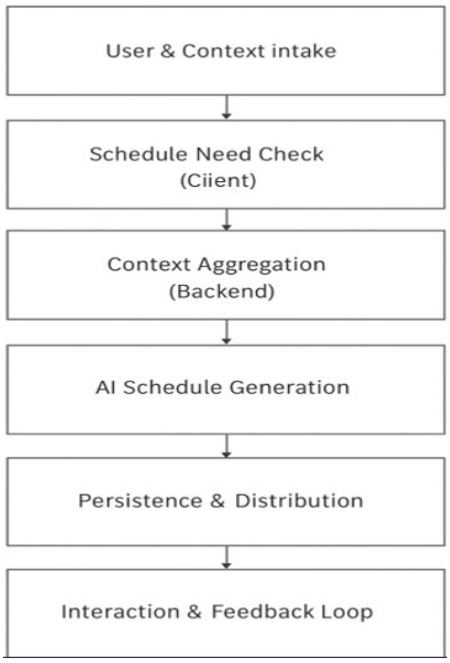
BLOCK DIAGRAM:



The Block diagram outlines a six-step process for AI-driven scheduling, beginning with user and context intake, followed by a schedule need check on the client side (noting a typo in "Client"), then context aggregation handled by the backend, leading to AI schedule generation, which is subsequently stored and distributed through persistence and distribution mechanisms, and finally refined through an interaction and feedback loop that ensures continuous improvement and responsiveness to user needs.

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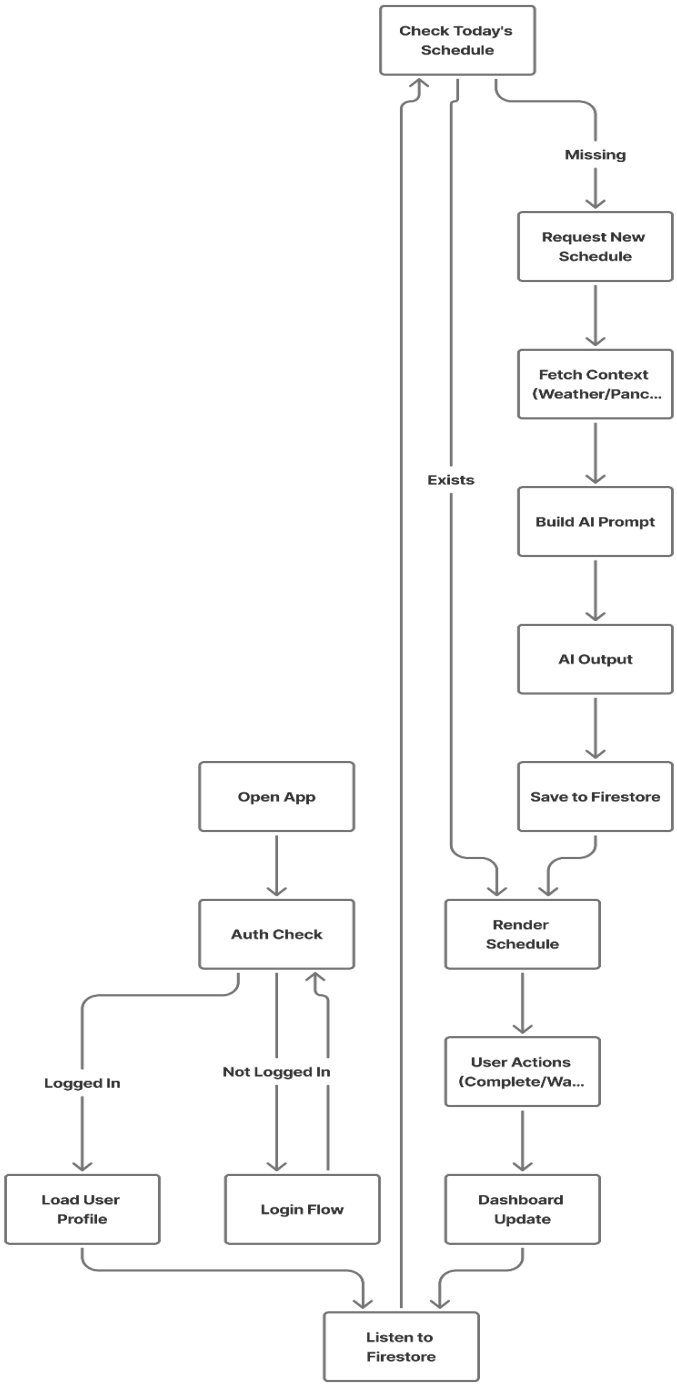
Working principle:



The working principle of GreenSpoonAI revolves around a closed-loop, context-aware scheduling system. Upon user authentication, the app checks Firestore for an existing daily schedule; if found, it renders immediately, ensuring minimal latency. If absent, the client triggers a backend request, which aggregates contextual inputs including weather, Panchang data, and dietary preferences. This enriched context is processed by an AI model to generate a personalized wellness routine, which is then stored in Firestore for real-time access and synchronization. As users interact with the schedule marking meals, tracking hydration, or adjusting activities these updates are logged and fed back into the system, enabling continuous refinement of future recommendations through adaptive learning.

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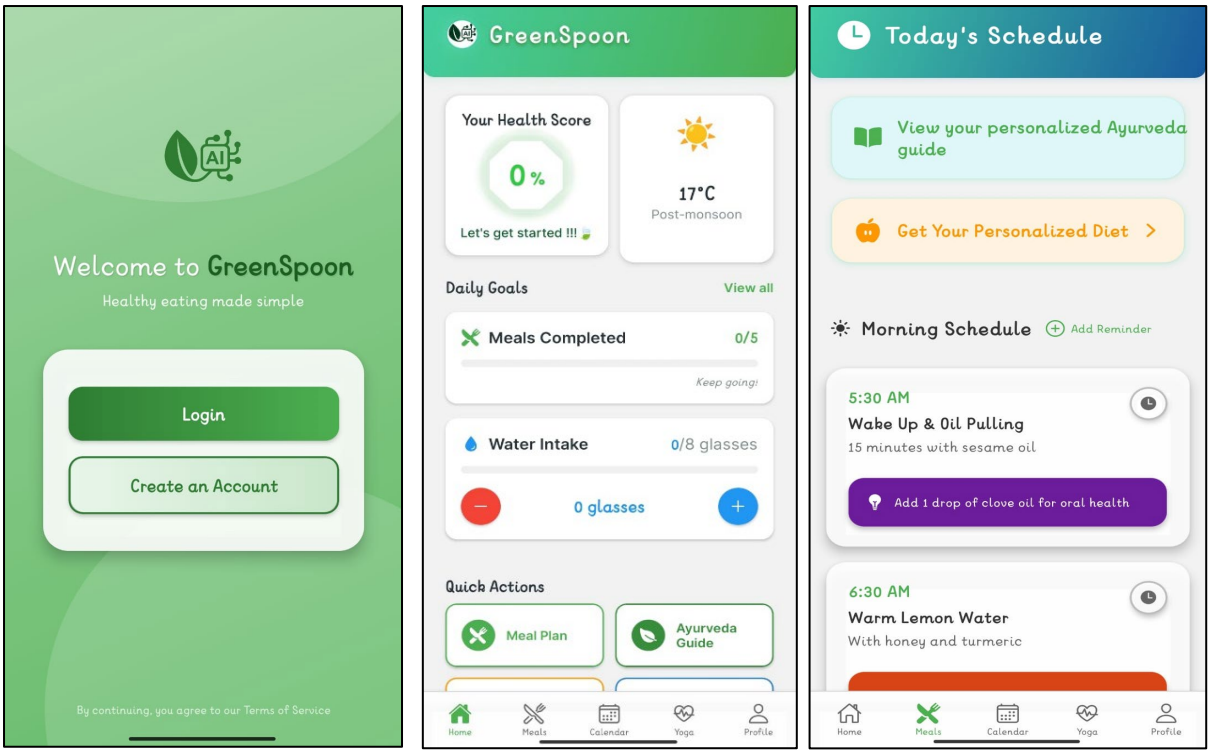
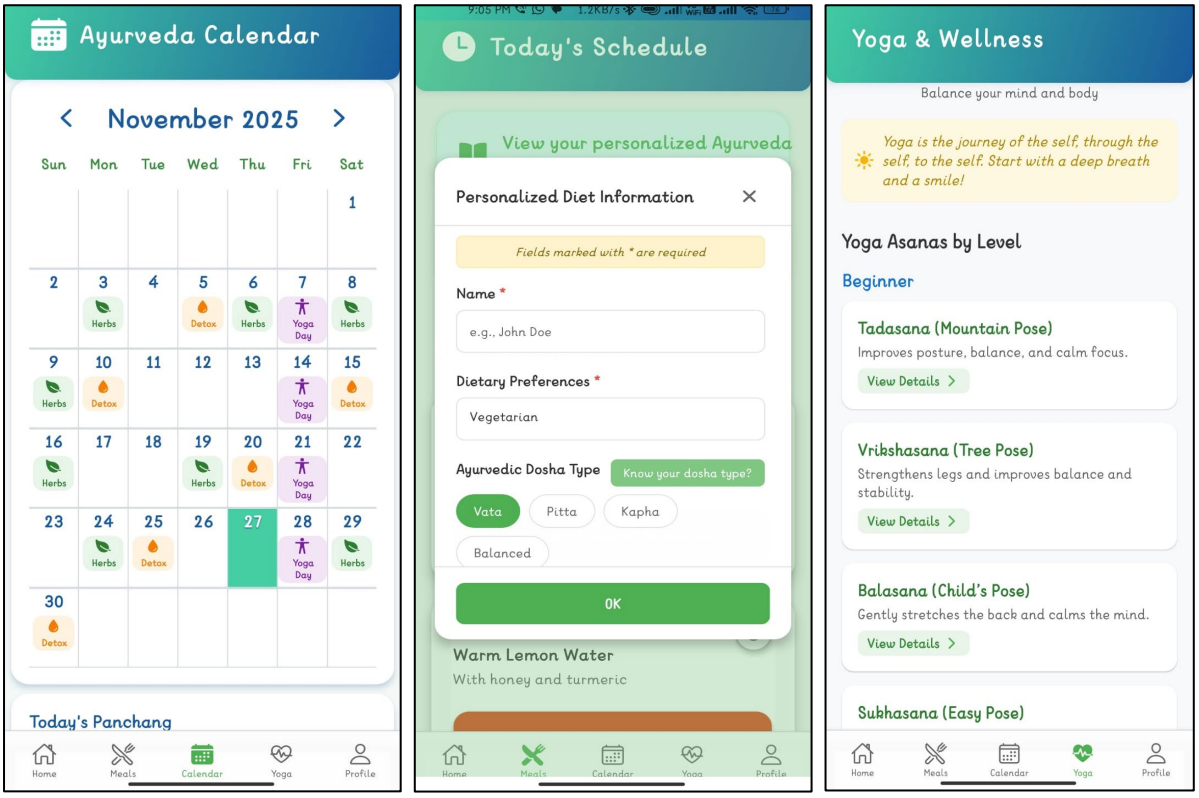
Output





GreenSpoonAI generates personalized daily wellness schedules by combining Panchang, weather, and dietary context. The routines are stored and synced via Firestore for instant access. User interactions such as meal tracking and hydration updates feed back into the system, enabling continuous refinement of future recommendations.

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CONCLUSION:

GreenSpoonAI demonstrates how traditional Ayurvedic principles can be transformed into a practical, adaptive digital wellness system through modern AI and real-time cloud technologies. By combining Panchang insights, weather data, and personalized dietary profiles, the platform delivers daily recommendations that evolve with user behavior. Its closed-loop architecture where client checks, backend intelligence, and Firestore synchronization operate seamlessly ensures low-latency updates and highly individualized routines. Overall, the system showcases an effective model for integrating cultural health knowledge with AI-driven personalization, making it suitable for real-world adoption and future clinical validation.

FUTURE SCOPE:

The GreenSpoonAI ecosystem can be expanded through several key enhancements. Wearable integration will enable real-time monitoring of activity, heart rate, and sleep to refine Ayurvedic recommendations. Voice-assistant features can improve accessibility by offering spoken guidance and personalized tips. Mental wellness modules such as meditation, breathwork, and stress tracking will support holistic health. Community-driven tools like group challenges and shared progress can boost motivation, while a full-featured web platform will broaden access across devices.

REFERENCE:

1. Srishti Shaumya and Rameshwar Kumar, Artificial Intelligence in Ayurveda: *A Systematic, Review (2020-2025)*
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