**Patent Draft for Curaid – AI Health Assistant**

**1. Title of the Invention:**

**Curaid – Your Health, Your Companion**

**2. Specify field of technology to which the invention belongs to:**

Artificial Intelligence, Healthcare Technology, Machine Learning, Generative AI, Natural Language Processing (NLP), Human-Computer Interaction

**3. List all the currently existing technologies/products that are similar to your invention:**

**Existing system/application 1:** Ada Health

**Problem Addressed:** Provides AI-based symptom checking and basic health advice but lacks

productivity and personalized preventive health features.

**Advantages:**

➢ Quick symptom analysis and health guidance

➢ AI-driven health insights

**Disadvantages:**

➢ No productivity features

➢ Limited preventive or predictive health tools

**Reference:** ada.com

**Existing system/application 2:** Practo

**Problem Addressed:** Online doctor consultation platform; primarily focused on appointments

rather than preventive or predictive health analysis.

**Advantages:**

➢ Connects patients directly with doctors

➢ Access to medical records and prescriptions

**Disadvantages:**

➢ Limited AI-driven health insights

➢ Focused mainly on consultations rather than overall wellness

**Reference:** practo.com

2**Existing system/application 3:** Headspace

**Problem Addressed:** Mental health and meditation app; lacks integration with physical health

monitoring or disease prediction.

**Advantages:**

➢ Tracks and improves mental well-being

➢ Offers guided meditation and stress relief exercises

**Disadvantages:**

➢ No physical health predictions

➢ No integration with AI-driven symptom checking or disease prediction

**Reference:** headspace.com

**Existing system/application 4:** Fitbit

**Problem Addressed:** Fitness tracking and activity monitoring app; does not provide AI-based

medical insights or mental health guidance.

**Advantages:**

➢ Strong integration with wearables

➢ Comprehensive tracking of fitness, sleep, and activity

**Disadvantages:**

➢ Does not provide AI-based disease prediction

➢ Limited mental health or productivity features

**Reference:** Fitbit

**Existing system/application 5:** Todoist

**Problem Addressed:** Productivity and task management app; does not focus on health or

wellness.

**Advantages:**

➢ Excellent task tracking and reminders

➢ Smart suggestions for task management

**Disadvantages:**

➢ Not health-focused

➢ Lacks AI/medical integration for wellness

**Reference:** Todoist

**Patents:**

1. **US20190345671A1 – Systems and methods for AI-based symptom checking**
   * Patent Link: https://patents.google.com/patent/US20190345671A1
   * Key Features:
     1. Symptom analysis using AI models.
     2. Provides possible conditions based on user data.
     3. Personalized recommendations via mobile apps.
2. **EP3498121A1 – Health assistant chatbot system**
   * Patent Link: https://patents.google.com/patent/EP3498121A1Key Features:
     1. Chatbot-based health consultation.
     2. Integration with healthcare databases.
     3. Provides non-critical health advice and triage.
3. **US10431457B2 – Machine learning for personalized healthcare predictions**
   * Patent Link: https://patents.google.com/patent/US10431457B2
   * Key Features:
     1. Predicts risk of diseases like diabetes.
     2. Uses patient health data for ML-based outcomes.
     3. Personalized prevention and monitoring plans.

**4. Background of the Invention**

Access to reliable and affordable healthcare information remains a significant challenge, especially in developing countries like India. Medical resources are often fragmented, written in highly technical terms, or scattered across various platforms. As a result, the general population—particularly students, working professionals, and individuals in rural or underserved regions—struggles to obtain accurate health guidance.

Common issues faced by users include:

* **Self-diagnosis from unreliable sources** such as the internet, which can lead to misinformation and panic.
* **Limited availability of doctors for non-critical health concerns**, causing delays in preventive care.
* **Mental health stigma**, which prevents individuals from openly seeking help.
* **Overlooked preventive healthcare**, as most people only consult doctors after symptoms worsen.
* **No unified digital solution** that combines disease prediction, mental health support, and productivity features like lifestyle tracking.

At the same time, AI-powered assistants are increasingly being adopted in domains such as customer support, fitness, and finance. Healthcare chatbots and symptom checkers exist, but they are either too general, lack disease prediction, or focus only on single aspects like diet or physical fitness.

This creates a major opportunity to **leverage AI, ML, and Generative AI models** to build a **comprehensive digital health companion** that not only answers health queries but also predicts risks, tracks habits, generates personalized health reports, and supports mental well-being.

The invention, titled **Curaid**, addresses these gaps through an **AI-powered health assistant** platform that integrates:

* Symptom checking and health queries (via Gemini API).
* ML-based disease prediction for **diabetes and heart disease**.
* Mental health check-ins to reduce stress and stigma.
* A **smart To-Do system** for lifestyle and wellness tasks.
* **Automated health report generation**, summarizing insights and recommendations from user data.

By combining conversational AI, ML predictions, and productivity tools, **Curaid becomes a holistic health companion** that empowers users to take proactive control of their physical and mental well-being.

**5. Drawbacks in existing state-of-art and how your invention helps to overcome such drawbacks:**

**Drawbacks in Existing Platforms**

Current health and wellness platforms, while useful, suffer from several key limitations that prevent them from being truly accessible, integrated, and effective for everyday users. These limitations include:

**Fragmented Solutions Across Different Apps**

* Most existing tools specialize in only one domain—symptom checking, fitness tracking, or mental health support. Users are forced to juggle multiple apps, making the experience inefficient and discouraging.[1], [3]

**Lack of Personalized Disease Prediction**

* Many symptom checkers suggest generic conditions but do not use ML models to predict chronic diseases like diabetes or heart disease based on individual health data. [5], [7]

**No Integration of Mental Health with Physical Health**

* Mental health check-ins are either missing or exist as standalone apps. Current systems rarely connect emotional well-being with physical health and lifestyle, which is critical for holistic care. [3], [4]

**Absence of Automated Health Reports**

* Users often receive fragmented advice without any consolidated summary of their health journey. No system generates personalized reports combining symptom queries, predictions, and lifestyle data. [1], [6]

**Static or Generic Chatbots**

* Existing healthcare bots often provide predefined responses with limited conversational flow and lack context retention.[5], [6]

**Unfriendly Interfaces for Non-Technical Users**

* Many platforms present overwhelming medical jargon, technical graphs, or cluttered dashboards. Users without medical or tech expertise find these difficult to interpret.[1],[9]

**How Curaid Overcomes These Challenges**

* **Unified Health Assistant**  
  Curaid integrates symptom checking, disease prediction, mental health support, lifestyle tracking, and report generation—all in one platform, reducing the need for multiple apps.
* **ML-Powered Disease Prediction**  
  By using supervised machine learning models, Curaid predicts risks for chronic conditions like **diabetes and heart disease**, offering proactive health alerts.
* **Holistic Health Support**  
  Curaid blends **mental and physical wellness**, offering symptom analysis alongside stress and mental health check-ins, encouraging balance between body and mind.
* **Automated Health Report Generation**  
  Curaid compiles user interactions, predictions, and tasks into **personalized health reports**, giving users a clear, actionable overview of their well-being.
* **Conversational AI with Context Memory**  
  Powered by **Gemini API**, the chatbot provides real-time, context-aware answers that adapt to user history and preferences, making it more human-like.
* **Simple and User-Friendly Interface**  
  The platform is designed to be intuitive and accessible, even for non-technical users, with clean dashboards, chat-based interactions, and easy navigation.

By combining **AI, ML, and Generative AI** in a seamless, user-friendly manner, Curaid transforms healthcare access into a **personalized, proactive, and holistic experience.**

**6. The technical features of your invention which are different from the existing inventions/applications:**

Curaid introduces several novel and technically distinctive features that set it apart from current health and wellness systems. While most platforms focus on isolated aspects like symptom checking or fitness tracking, **Curaid integrates multiple health dimensions** within a modular and intelligent architecture.

The following technical innovations define the uniqueness of Curaid:

**1. Hybrid AI–ML Architecture**  
Unlike conventional health apps that use either static symptom checkers or isolated ML models, Curaid combines **Generative AI (Gemini API)** for conversational health guidance with **machine learning models** for **diabetes and heart disease prediction**. This dual approach allows both open-ended conversations and precise predictive analytics.

**2. Automated Health Report Generation**  
A standout feature of Curaid is its ability to **compile user inputs, disease predictions, lifestyle data, and chat interactions into a personalized health report**. These reports summarize symptoms, risks, and recommendations in simple language, empowering users to track their progress and share insights with healthcare professionals.

**3. Modular System Design**  
Curaid is built on a **modular architecture** consisting of independent but interconnected components:

* **Frontend (HTML/CSS/JS + Django):** Provides a smooth chat-based interface, task manager, and health dashboards.
* **Backend (Django):** Handles user authentication, chat management, and data integration.
* **Database Layer (SQLite/MySQL):** Stores user data, chat histories, prediction results, and reports.
* **AI/ML Module:** Gemini API for generative responses and scikit-learn–based ML models for disease prediction.  
  This modular design ensures scalability, maintainability, and easy integration of future features like new disease models.

**4. Smart To-Do + Lifestyle Integration**  
Unlike existing symptom checkers, Curaid incorporates a **task recommendation and tracking system** that suggests health-related tasks (e.g., drink water, track blood sugar, exercise) and monitors completion, merging healthcare with productivity.

**5. Conversational AI with Context Retention**  
Curaid’s AI assistant maintains **context memory** within a chat session, allowing it to give follow-up answers based on prior queries. This improves natural conversation flow, making it more reliable than static bots that treat every question as standalone.

**6. Secure User Data Handling**  
All personal health data, predictions, and chat histories are securely stored with **role-based authentication**. The system ensures **privacy and compliance** with healthcare data standards by logging activities and encrypting sensitive records.

Together, these technical features make **Curaid a robust, intelligent, and user-adaptive platform** that goes beyond conventional health apps to provide a **personalized, preventive, and holistic digital health companion**.

**7. Main advantages of your invention:**

The invention, **Curaid**, introduces a set of practical and technical advantages designed to overcome the limitations of existing health platforms. These benefits improve accessibility, awareness, and engagement, making healthcare support more proactive and holistic.

**• Comprehensive Health Companion**  
Unlike fragmented solutions, Curaid integrates **symptom checking, disease prediction, mental health support, lifestyle tracking, and report generation** into a single platform, saving users from switching between multiple apps.

**• Preventive Healthcare through ML Predictions**  
By predicting risks for chronic diseases like **diabetes and heart disease**, Curaid empowers users to take preventive steps early, reducing the chance of health complications.

**• Personalized Health Reports**  
Curaid automatically generates **easy-to-understand health reports** that summarize symptoms, risks, lifestyle tasks, and recommendations. These reports can be reviewed by users or shared with doctors for better consultations.

**• Holistic Wellness: Body + Mind**  
Curaid addresses both **physical and mental health**. Users can log symptoms while also checking in on stress and mood, bridging the gap between physical conditions and emotional well-being.

**• Smart To-Do and Lifestyle Tracking**  
The integrated **To-Do system** transforms health management into everyday habits by suggesting personalized tasks like exercise, hydration, or relaxation activities, promoting long-term lifestyle improvements.

**• User-Friendly Conversational Interface**  
The AI chatbot powered by Gemini ensures **natural, context-aware conversations**, making health advice feel personal and approachable rather than robotic or overwhelming.

**• Scalable, Modular, and Secure System**  
Built on modular architecture, Curaid is easy to expand with new ML models or health features. With secure authentication and encrypted storage, it ensures that **personal health data remains private and protected.**

Collectively, these advantages position **Curaid as a socially impactful, intelligent, and accessible health assistant** that promotes proactive healthcare, healthy habits, and holistic well-being.

**8. Complete description of the invention:**

**a. Components/Embodiments Involved**

**• User Module**  
The User Module provides secure registration and login options (email/password, Google, OTP). Once logged in, users access an interactive **chatroom powered by Gemini API** for symptom checks, mental health support, and health-related queries.

* **Chat History:** Stores previous conversations for reference.
* **Health Report Explorer:** Allows users to view generated reports summarizing their health interactions and predictions.
* **Smart To-Do Manager:** Suggests and tracks health-related tasks such as exercise, diet, hydration, or stress-relief activities.
* **Profile Manager:** Enables users to manage personal details, password, and health preferences.

**• Admin Module**  
The Admin Module is designed for system management and data accuracy.

* **User Account Management:** Admins can view, modify, or deactivate accounts.
* **ML Model Updates:** Admins can upload new models or retrain existing ones (e.g., adding hypertension prediction).
* **Chatbot Knowledge Base:** Admins can refine prompts and content to improve Gemini’s responses.
* **System Settings:** Configurations for backend performance, report formats, and secure storage.

**• Chatbot (AI Assistant)**  
The Chatbot API Module handles natural language queries and responses.

* **Gemini API Integration:** Processes queries and generates natural conversational answers.
* **Context Memory:** Remembers user input within a session, enabling smoother dialogue.
* **Health Query Mapping:** Directs symptom inputs to ML models for prediction or responds with lifestyle advice.
* **Mental Health Support:** Provides supportive, stigma-free responses for mood check-ins and stress queries.

**• ML Prediction Engine**  
This module runs disease risk models trained on medical datasets.

* **Diabetes Prediction Model:** Uses user inputs like age, BMI, glucose levels, etc.
* **Heart Disease Prediction Model:** Uses features like cholesterol, blood pressure, and activity levels.
* **Output Integration:** Risk scores are seamlessly combined with chatbot responses and health reports.

**• Health Report Generator**  
A dedicated module that compiles data from chats, ML predictions, and To-Do logs into **personalized health reports**.

* **Summaries:** Presents user’s symptoms, risks, and lifestyle habits.
* **Visual Insights:** Charts and metrics for better understanding.
* **Shareable Format:** Reports can be downloaded or shared with doctors.

**• Database**  
The Database securely stores:

* **Users Table:** Credentials, preferences, health data references.
* **Chat History Table:** Logs all chatbot interactions with timestamps.
* **ML Results Table:** Stores prediction outcomes for future reference.
* **Reports Table:** Generated health reports linked to users.
* **Admin Table:** Admin authentication and system logs.  
  Data is encrypted, access-controlled, and backed up regularly to ensure reliability and security.

**b. How are the components installed/arranged?**

* The **Frontend (HTML, CSS, JavaScript with Django templates)** provides a clean interface for chats, reports, and To-Do tracking.
* The **Backend (Django)** manages requests between frontend, ML models, and the database.
* **AI Chatbot (Gemini API)** sits at the core, answering queries and directing user input to either ML models or stored content.
* **ML Engine** is containerized and modular, allowing deployment of multiple models without disrupting the system.
* **Database Layer (SQLite/MySQL)** ensures all user data, predictions, and reports are stored securely.
* Admin and user modules are accessed through role-based dashboards.

This arrangement ensures smooth communication between modules, real-time predictions, and secure storage of sensitive health data.

**c. Figures/Structures (conceptual placeholders)**

* **Figure 1 – Operational Diagram** (User → Chatbot → ML Engine → Reports → Database)
* **Figure 2 – Detailed System Architecture** (Frontend, Backend, API, DB, ML, Admin)
* **Figure 3 – System Overview** (User & Admin interaction flow)

**List of novel features in the invention:**

* Hybrid **Generative AI + ML** health assistant.
* Automated **personalized health report generation**.
* Integrated **mental health + physical health** support.
* Smart **To-Do manager** for lifestyle habits.
* Conversational AI with **context memory**.
* Modular design for easy addition of new disease models.
* Secure, role-based authentication and encrypted health data storage.

**9. List of keywords relevant to the invention:**

HealthTech, AI Health Assistant, Symptom Checker, Machine Learning, Disease Prediction, Diabetes Risk Detection, Heart Disease Risk Detection, Generative AI, Healthcare Chatbot, Mental Health Support, Smart To-Do, Automated Health Reports, Preventive Healthcare

**10. Any other relevant details:**

The invention has **strong applicability** for:

* **Individuals** seeking everyday health guidance, preventive alerts, and lifestyle support.
* **Students and working professionals** who want accessible, conversational health assistance without needing separate apps for fitness, mental health, and symptom checking.
* **Healthcare organizations** that wish to integrate AI-powered assistants for patient pre-screening and preventive care.
* **Government and NGOs** promoting digital health literacy and preventive care in underserved regions.

**Scalability:**

* Future versions of Curaid can integrate **additional ML models** (e.g., hypertension, kidney disease).
* The platform is modular and can be deployed in both **web and mobile formats**.
* Regional adaptation with **multi-language support** can widen accessibility across diverse populations.

**Social Impact:**  
Curaid democratizes healthcare by offering **affordable, accessible, and holistic digital health support**. By blending **AI conversations, ML predictions, and lifestyle tracking**, it empowers users to take control of their physical and mental well-being, reducing reliance on unreliable sources and promoting preventive care.

**11. Any other relevant details:**

The invention has strong applicability for **NGOs, healthcare providers, wellness organizations, and government initiatives** aiming to spread **digital health awareness and preventive care**. It is designed with scalability and **regional adaptability** in mind, allowing wider deployment across Indian states and eventually in other countries.

Curaid can be integrated into:

* **University health programs** to support students.
* **Corporate wellness platforms** for employee well-being.
* **Public health campaigns** to promote preventive healthcare at the grassroots level.

Its modular architecture ensures that additional **disease models and regional language support** can be added over time, making it future-proof and adaptable to evolving healthcare needs.

**12. References:**

1. Ada Health, “AI-powered symptom checker,” [Online]. Available: https://ada.com
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4. Mayo Clinic, “Symptom Checker,” [Online]. Available: <https://www.mayoclinic.org/symptom-checker>
5. US Patent 20190345671A1, “Systems and methods for AI-based symptom checking,” [Online]. Available: https://patents.google.com/patent/US20190345671A1
6. EP Patent 3498121A1, “Health assistant chatbot system,” [Online]. Available: https://patents.google.com/patent/EP3498121A1
7. US Patent 10431457B2, “Machine learning for personalized healthcare predictions,” [Online]. Available: https://patents.google.com/patent/US10431457B2
8. A. Ghosh, P. Kumar, and S. Sharma, “AI in preventive healthcare: Opportunities and challenges,” IEEE Access, 2023.
9. World Health Organization (WHO), “Digital health strategy 2020–2025,” [Online]. Available: <https://www.who.int/publications/i/item/9789240020924>