**Project Title:**

**AI/ML-Based Vehicle Health Diagnostics with Voice Control & Smart Assistant Device**

1. **Real-Time Vehicle Health Monitoring**
   * **Uses OBD-II sensor to collect engine, battery, fuel, temperature data**
   * **ML model analyzes the data and predicts possible issues**
2. **Voice Command Support (Multilingual)**
   * **Users can ask: *"Is my car engine okay?"***
   * **Supported in Telugu, Hindi, English (expandable)**
3. **Smart Assistant Device (like Alexa)**
   * **A home voice assistant connected to your vehicle**
   * **You can ask about your car status without going outside**
   * **Example: *“Hey CarMate, is the tyre pressure low?”***
4. **Predictive Maintenance Alerts**
   * **Notifies before failure happens**
   * **Example: *"Battery may fail within 5 days."***
5. **Web Dashboard**
   * **Visual view of all car vitals**
   * **Past records, alerts, usage logs**
6. **Cost-Effective & Easy to Use**
   * **Works on low-cost hardware**
   * **Anyone can use with simple voice queries**
7. **24/7 Car Monitoring – Even When Parked**
   * The system monitors car status even when the vehicle is idle.
   * Alerts you if anything unusual is detected (battery drain, fuel leakage, etc.).
8. **Emergency Assistance Integration**
   * Can connect to emergency services if major fault or accident is predicted.
   * Example: Sends SMS alert to family or service center.
9. **User Customization Options**
   * Users can set voice assistant to male/female voice.
   * Choose preferred language and notification types.
10. **Mobile App Control**

* View vehicle health, receive alerts, and ask queries from your mobile app.
* Works remotely via internet.

1. **Driving Behavior Analysis (Add-on Feature)**

* Tracks harsh braking, overspeeding, fuel efficiency
* Gives driving tips to improve mileage and safety

1. **Cloud Backup & Data Security**

* All data is stored securely on cloud servers.
* Easy to restore and track service history.

1. **Eco-friendly Maintenance Suggestions**

* System suggests maintenance actions that save fuel and reduce emissions.

1. **Low Maintenance, Plug-and-Play Setup**

* The device can be plugged into OBD-II port, no wiring or installation needed.

1. **Target Users:**

* Individual car owners
* Taxi/Fleet operators
* Rental vehicle companies
* Car service centers

16. \*\*Scheduled Health Reports via WhatsApp or Email\*\*

\* Automatically sends weekly or monthly vehicle health summary to the owner's WhatsApp or email.

17. \*\*Offline Voice Support (No Internet Needed)\*\*

\* Basic voice commands can be used even without internet using offline TTS/STT (e.g., using `Vosk`, `Pyttsx3`).

18. \*\*Battery Health Forecasting\*\*

\* Predict battery degradation over time and suggest replacements early.

20. \*\*Self-Learning System\*\*

\* The more the car is driven, the better the ML model learns and personalizes the diagnostics.

21. \*\*Child Lock/Driver Safety Voice Alerts\*\*

\* Reminds drivers about seatbelt, over-speeding, or unsafe behaviors with voice prompts.

22. \*\*Integration with Smart Home Devices\*\*

\* Sync with Alexa or Google Home to ask: “Is my car ready for the trip?”

23. \*\*Refuel & Service Reminders\*\*

\* Voice assistant reminds owner of next service or fuel refill based on usage patterns.

24. \*\*Security Alerts\*\*

\* Notifies you if someone tries to start or move the car without permission.

