Automobile GPS Tracking System Using ESP8266 & NEO■M8N (Human Experience Report)

Introduction

Indha project I started mainly because I wanted to create a practical IoT system. I built a real-time GPS tracking device using ESP8266 and NEO■M8N. Throughout the project, debugging Wi-Fi drops, GPS signal issues, and Firebase uploads gave a real engineering experience.

System Overview

• ESP8266 NodeMCU – WiFi + controller
• NEO■M8N GPS – High-accuracy receiver
• Firebase – Cloud database
• TinyGPS++ – GPS data parsing
• SoftwareSerial – GPS communication

My Build Journey

1. GPS Locking Issues
Cold start-la GPS fix varradhukku neraya time edukum. Roof mela poi antenna align panna thaan stable reading kidaichudhu.

2. Wi-Fi Mood Swings
ESP8266 sometimes connects instantly, sometimes keeps trying forever. I implemented auto-reconnect logic.

3. Firebase JSON Overflow
Timestamp-based nodes created huge data. Learned to clean old entries.

4. Serial Monitor = Best Friend
Every reading, every satellite count—everything I watched live.

5. Power Supply Problems
Breadboard power gave random resets. Direct 5V fixed everything.

Results

• 1–3 meter accuracy outdoors
• Smooth speed updates
• Stable Firebase logging
• Perfect for real vehicle tracking

Applications

• Car/Bike tracking
• School van monitoring

• Fleet management
• Anti-theft
• Route history logging

Conclusion

Every issue—GPS drops, Wi-Fi failures, Firebase errors—taught something new. But final-a when the vehicle's dot moved live on the map, I felt like the system came alive.

"Yeah I see you on the wall."
This project is one of the most satisfying IoT builds I have completed.