Voice-Controlled Autonomous Navigation for Remote-Controlled Vehicle

Algorithm

1. **Start the system and initialize all modules**
   (Microcontroller, Bluetooth module, motor driver, sensors, LCD).
2. **Establish Bluetooth connection**
   The mobile app connects to the vehicle's Bluetooth module.
3. **Wait for voice input from the user**
   The mobile app listens and converts spoken words into text-based commands.
4. **Send the converted command to the microcontroller**
   The command is transmitted through Bluetooth in real time.
5. **Receive the command in the microcontroller**
   Arduino reads the incoming serial data and stores the command.
6. **Compare the received command with predefined keywords**
   (e.g., “forward”, “reverse”, “left”, “right”, “stop”).
7. **Translate matched command into motor driver signals**
   Set motor driver pins HIGH/LOW based on direction.
8. **Move the vehicle according to the command**
   Motors rotate forward/reverse or turn left/right as required.
9. **Monitor system performance**
   Check battery level, sensor inputs, and command accuracy.
10. **Stop the vehicle or wait for the next command**
    System remains active for continuous voice-based navigation.