README

Hardware Components Used

1) MPU6050 (IMU Sensor)

This is the main motion & posture sensor.
It measures acceleration (ax, ay, az) and tilt/angle.
From this we detect g-force, leaning forward / backward, and sudden impact (crash).

2) GPS Module (TinyGPS / NEO-6M)

This gives us latitude, longitude and GPS speed (km/h).
This allows us to draw the route on map, calculate distance, and classify ride mode (Walk / Scooter / Bike).

3) Arduino / Microcontroller Board

Arduino reads both sensors (IMU + GPS), processes raw values and sends telemetry as JSON through serial cable.
It acts as the data collection & computation brain.

4) Battery / Power Supply

Portable power bank or Li-ion battery powers the Arduino + Sensors while riding.

5) Wires / Mounting

Basic jumper wires connect IMU & GPS to the Arduino pins.
The hardware can be mounted on helmet, jacket, trouser pocket, handlebar etc — no permanent modification needed.

RideAssist is a real-time rider monitoring system that reads IMU + GPS sensor data from an Arduino, sends it to a Flask server, and displays it live in a React web dashboard. The system shows speed, tilt, posture, g-force, GPS map path, ride mode (Idle / Walking / Scooter / Bike) and also detects crashes with an automatic 30-second emergency call countdown. Each ride can be started/stopped, logged, and exported as JSON/CSV locally (no cloud). This meets the requirement of visible live UI, timestamped ride logs, posture identification, mode detection and on-track demonstrability in one clean integrated workflow.