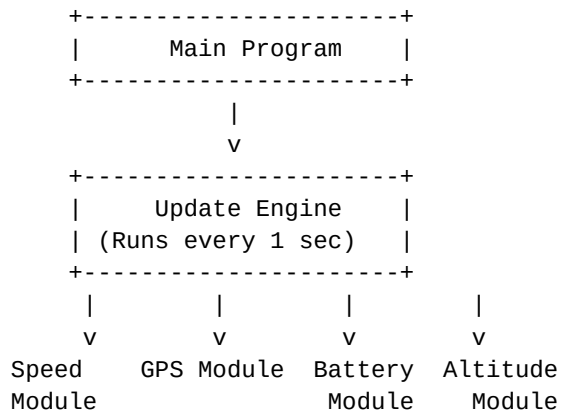
Drone Telemetry Dashboard

Design Document

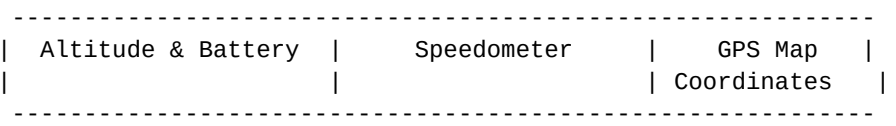
1. System Architecture Design

The application follows a modular structure where each telemetry component is handled independently but controlled by a central update engine.



2. User Interface Design

The dashboard layout is divided into three visual panels for clarity and separation of telemetry data.



3. Data Flow Design

• The update() function executes every 1 second. • Speed is calculated based on acceleration, cruise, and deceleration phases. • GPS position updates using heading and speed-based movement. • Battery decreases gradually during runtime. • Altitude fluctuates to simulate flight conditions. • All UI components refresh simultaneously.

4. Design Decisions

• Tkinter was selected for lightweight GUI development. • The system avoids external libraries to keep implementation simple. • Logical separation improves readability and maintainability. • Real-time simulation is controlled using Tkinter's after() method.