Sprint 2 – Week 8 Progress & Roadmap Adjustment

Adjusted Execution Timeline

May 2-3

First round of physical vehicle data logging sessions

May 6-9

Initial CSV extraction, cleaning, and inspection

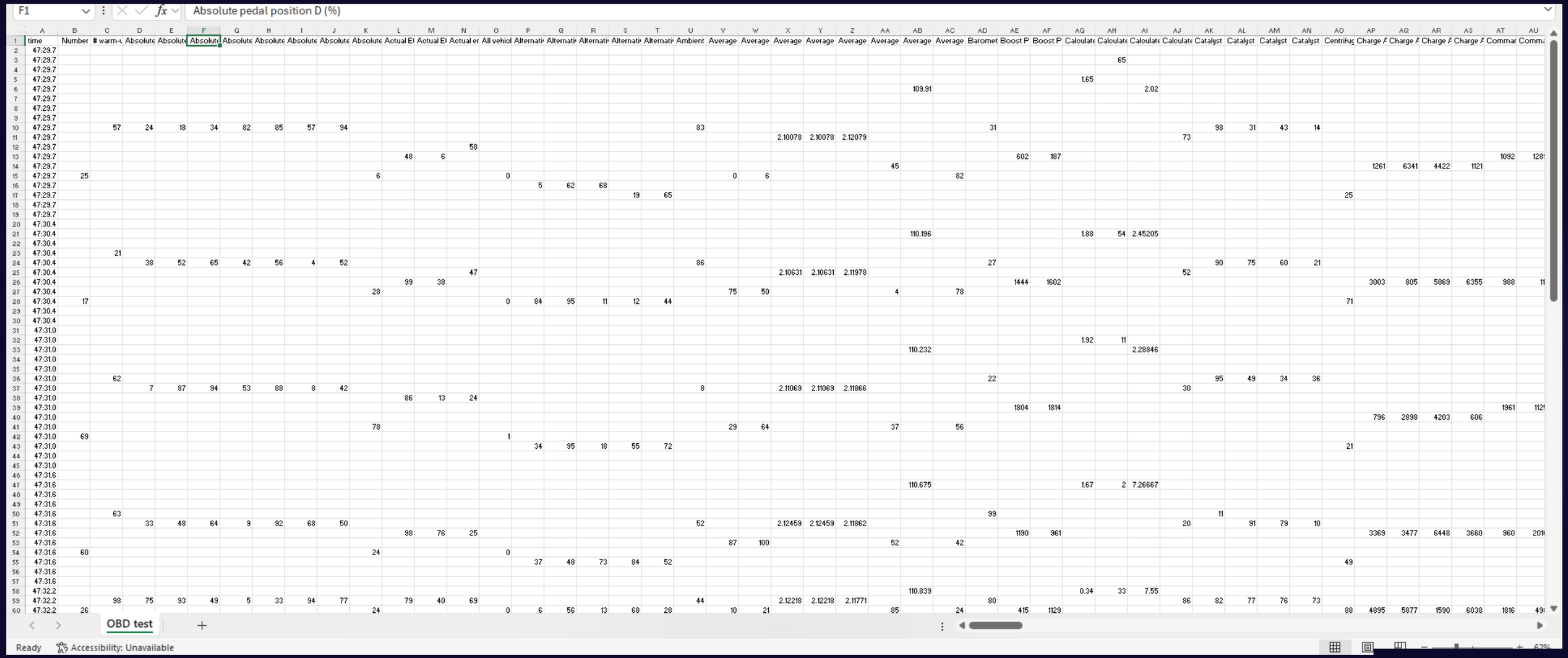
Next Deliverables

Sample vehicle log and evaluation of real vs external datasets

Our timeline has been adjusted to accommodate the hardware and vehicle access delays. We'll begin our first round of physical data logging on May 2-3, followed by data extraction and cleaning from May 6-9.

The upcoming deliverables will include sample vehicle logs and a comparative evaluation between our collected data and external datasets. We've also established a contingency plan to use an alternate vehicle for testing if required to keep the project on track.

Synthetic data collected from Car Scanner OBD-II



ELM327 Wi-Fi Adapter

- Setup tonight
- Plan for setup issues
- Mobile app (Car Scanner chosen)
- Gather initial data logs via Mobile App
- Export data (Email if required)

Data Collection, Logging and Storage

Data Source
- Vehicle telemetry collected using the Torque Pro Android app via OBD-II interface.

Data Transmission
- Torque app configured to send HTTP POST requests to a custom logging server forked from the econpy/torque project.

Server Setup
- Server will run on a Raspberry Pi already hosting other websites.

Data Storage
- Logged data stored in a local **MySQL database**.
- Fields include timestamp, vehicle ID, and various sensor metrics (e.g., RPM, engine temperature, fuel level).
- Can then be exported as CSV for use in exploration and training.

What Logged Data Looks Like and to be Visualized (Audi A4)

This example data visualization from an Audi A4 test drive illustrates the relationships between key vehicle parameters. Note how RPM spikes correspond with acceleration phases while speed drops align with braking or idling periods. The throttle position curve confirms driver intent throughout the journey.

These correlated data patterns provide valuable insights for trip segmentation, anomaly detection, and driving behavior scoring algorithms. By analyzing the relationships between these parameters, we can develop accurate models of normal vehicle operation versus potential issues or inefficient driving patterns.

Data Quality Plan & Strategy

Sampling Configuration

- 2 Hz collection rate (adjustable)
- 500ms intervals between readings (universal but adjustable)
- Timestamp precision to milliseconds

Required Parameters

- Vehicle Speed (km/h)
- Engine RPM
- Throttle Position (%)
- Coolant Temperature (°C)
- Fuel Consumption Rate (L/h)

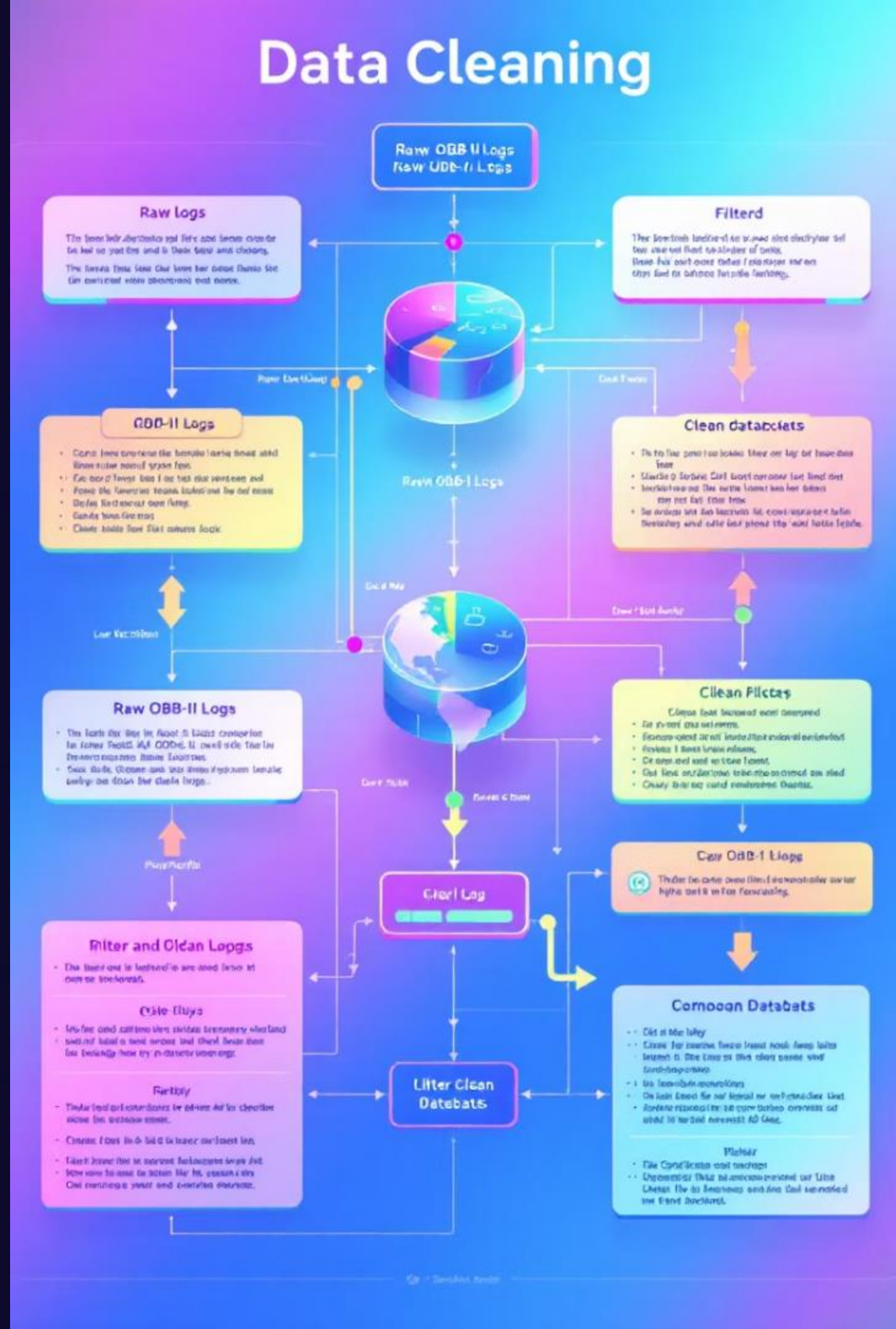
Cleaning Procedures

- Forward-filling short data gaps
- Dropping saturated values (255)
- Removing null or invalid rows
- Normalizing timestamps

Processing Approach

- 3-second rolling window alignment
- Interpolation for consistent intervals
- Smoothing for modeling stability

Our data quality strategy focuses on consistent sampling and robust cleaning procedures. By applying a rolling window approach with interpolation, we'll ensure smoother data for modeling while preserving the essential characteristics of the vehicle's performance patterns.



Sprint Planning

Immediate Next Steps

- Physical Data collection begins
- Live data logging

Next Week

- Server Set-up
- Data collection automation
- Initial data cleaning and inspection