

MICHIGAN STATE

UNIVERSITY

Beta Presentation

Railroad Physics Data Visualization

The Capstone Experience

Team Union Pacific

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Fall 2019



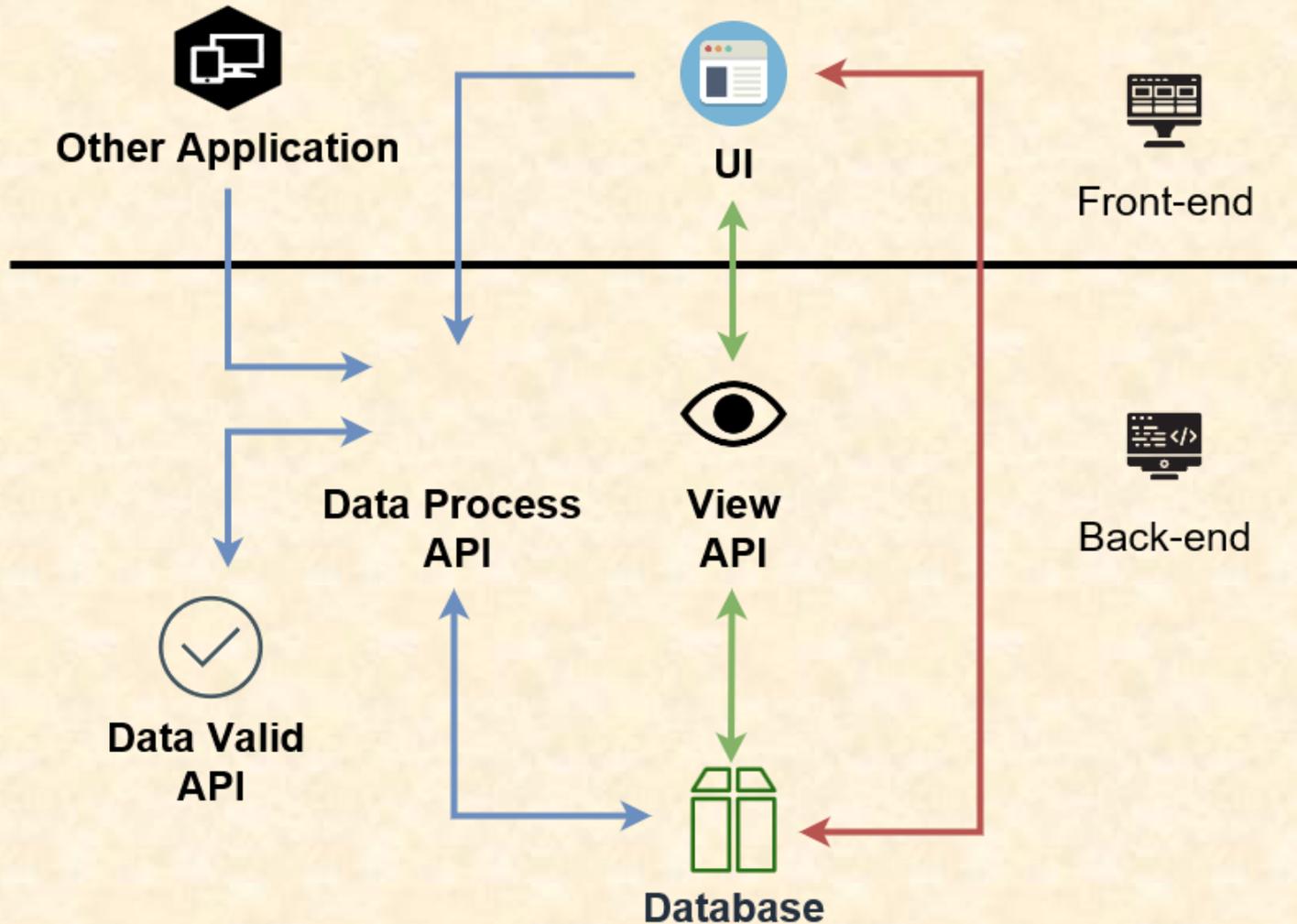
*From Students...
...to Professionals*

Project Overview

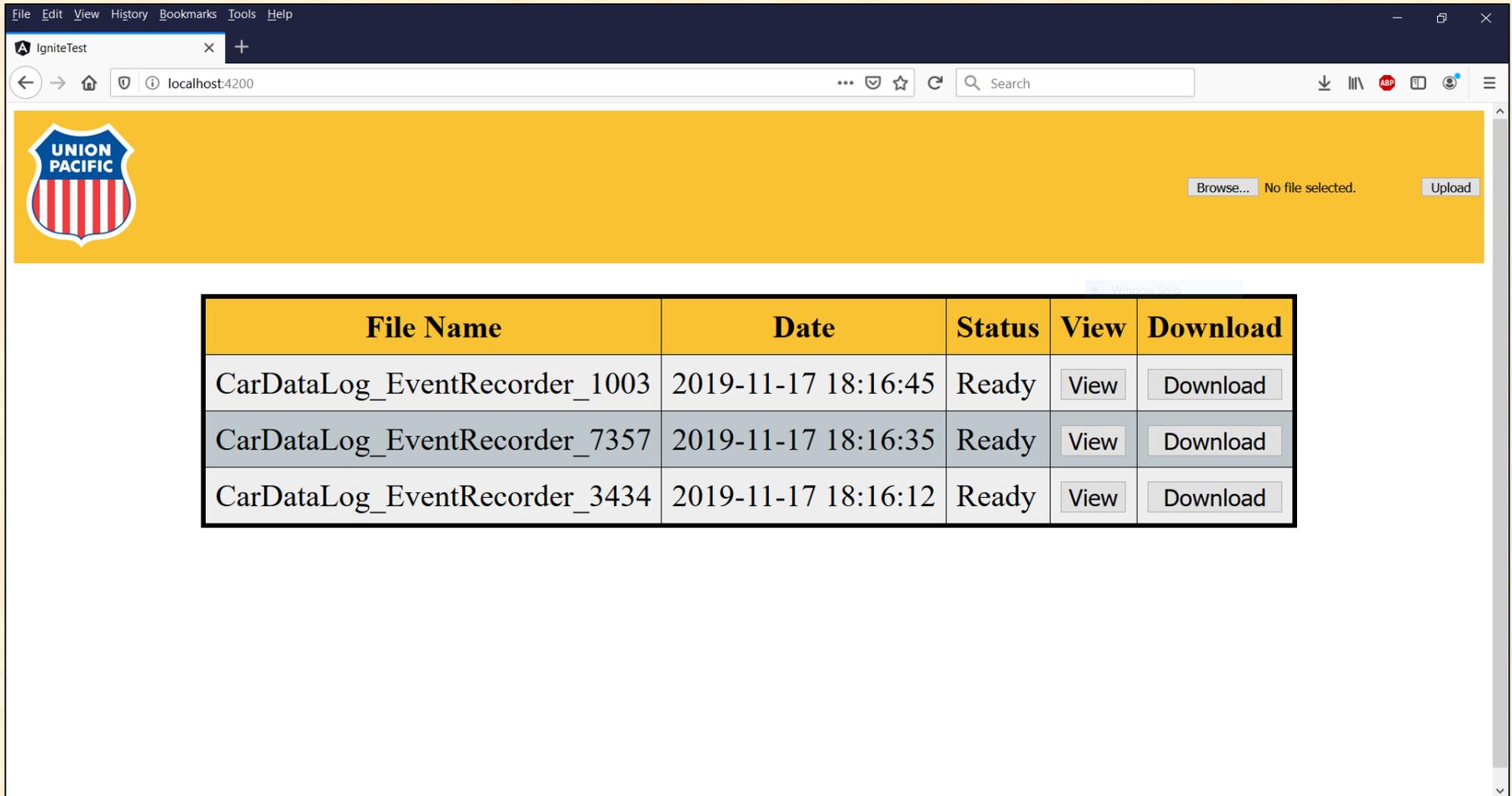
- PS Technology uses a Unity physics engine to simulate train runs
- Need a way to process data into visual outputs
- Their solution is web based UI to generate and display static and animated graphs



System Architecture



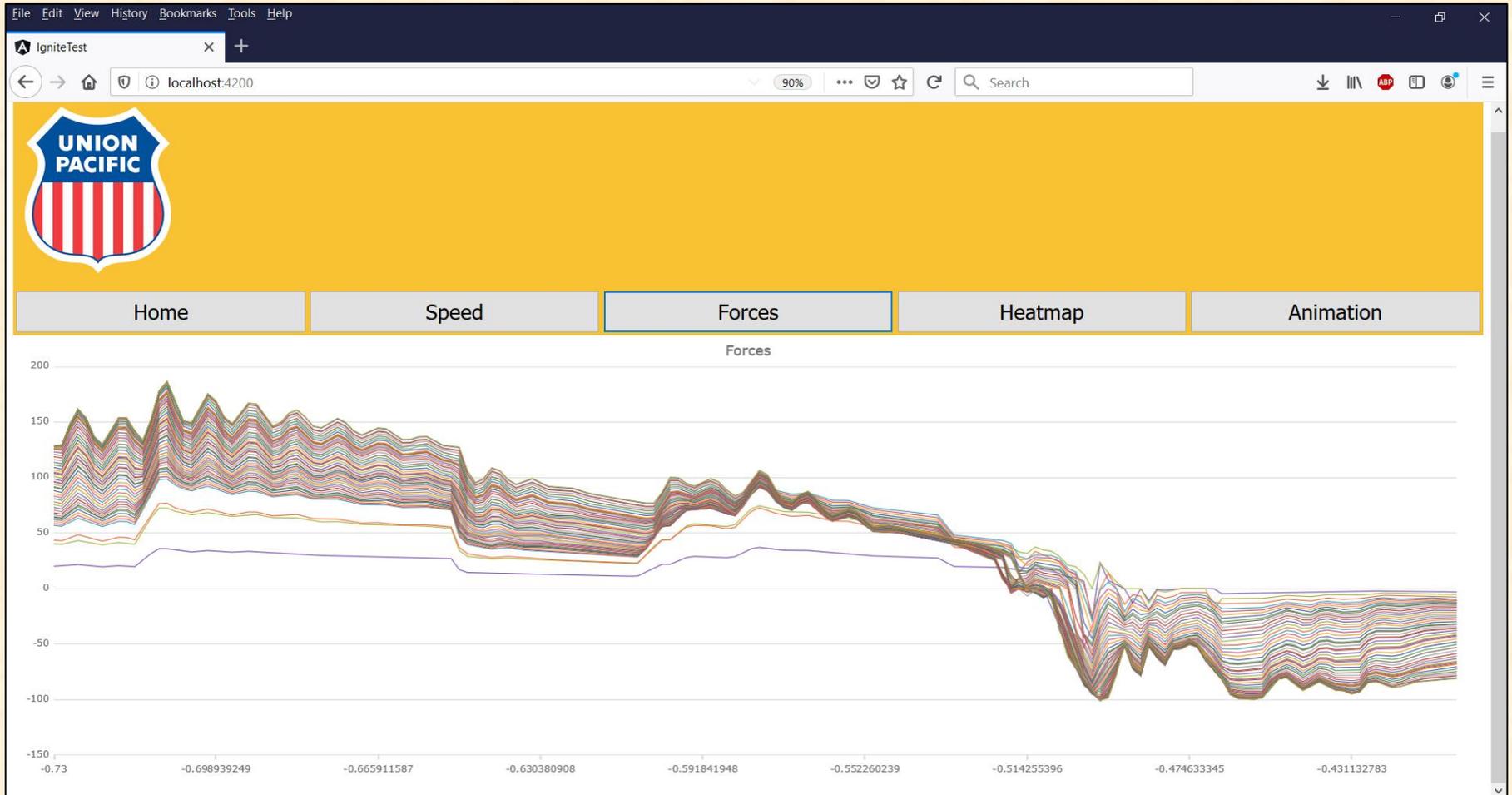
Web UI Table Component



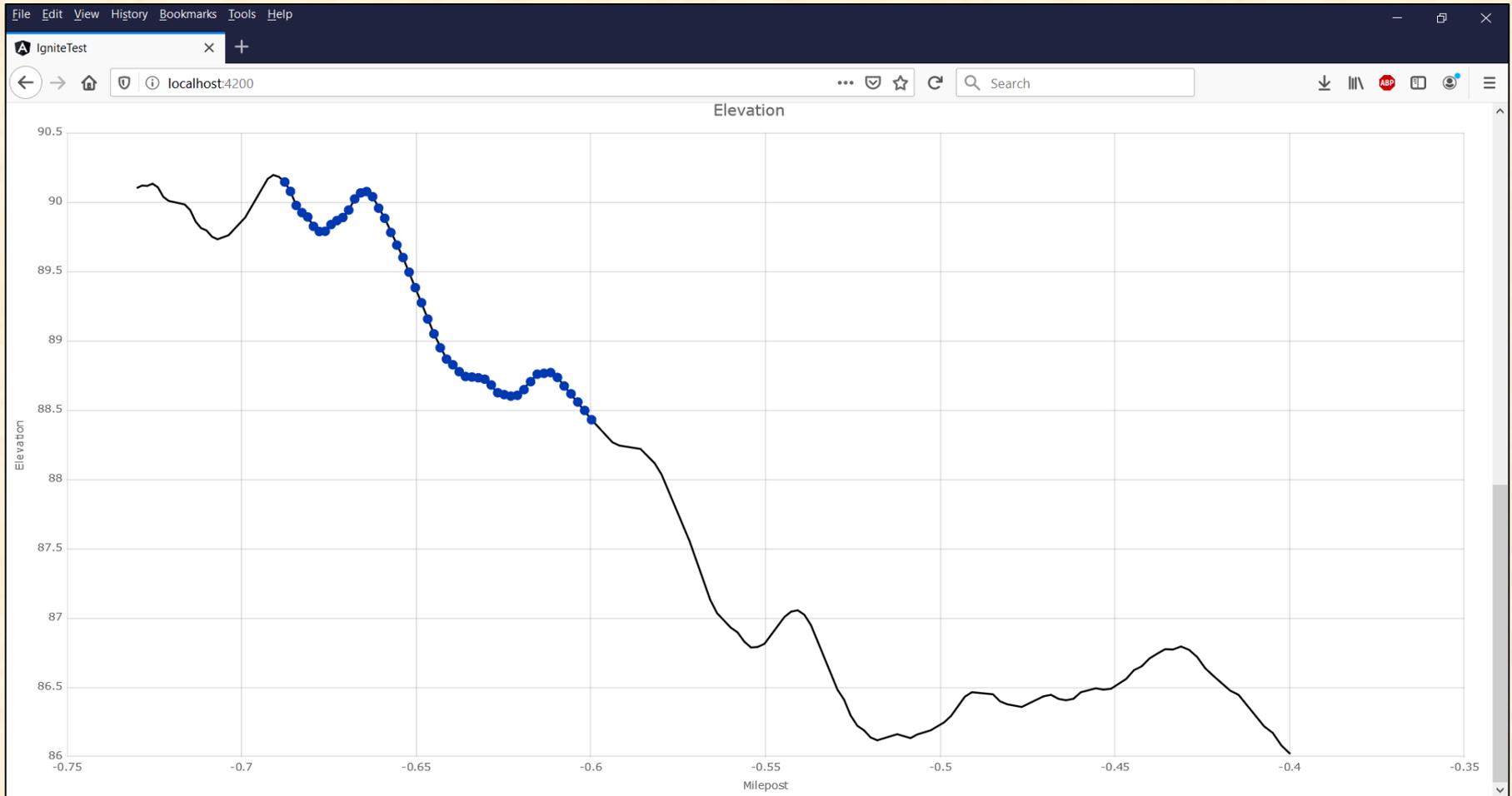
The screenshot shows a web browser window with the address bar at localhost:4200. The page features a yellow header with the Union Pacific logo on the left and a file upload area on the right containing a 'Browse...' button, the text 'No file selected.', and an 'Upload' button. Below the header is a table with five columns: File Name, Date, Status, View, and Download. The table contains three rows of data, each with a 'View' and 'Download' button in its respective columns.

File Name	Date	Status	View	Download
CarDataLog_EventRecorder_1003	2019-11-17 18:16:45	Ready	View	Download
CarDataLog_EventRecorder_7357	2019-11-17 18:16:35	Ready	View	Download
CarDataLog_EventRecorder_3434	2019-11-17 18:16:12	Ready	View	Download

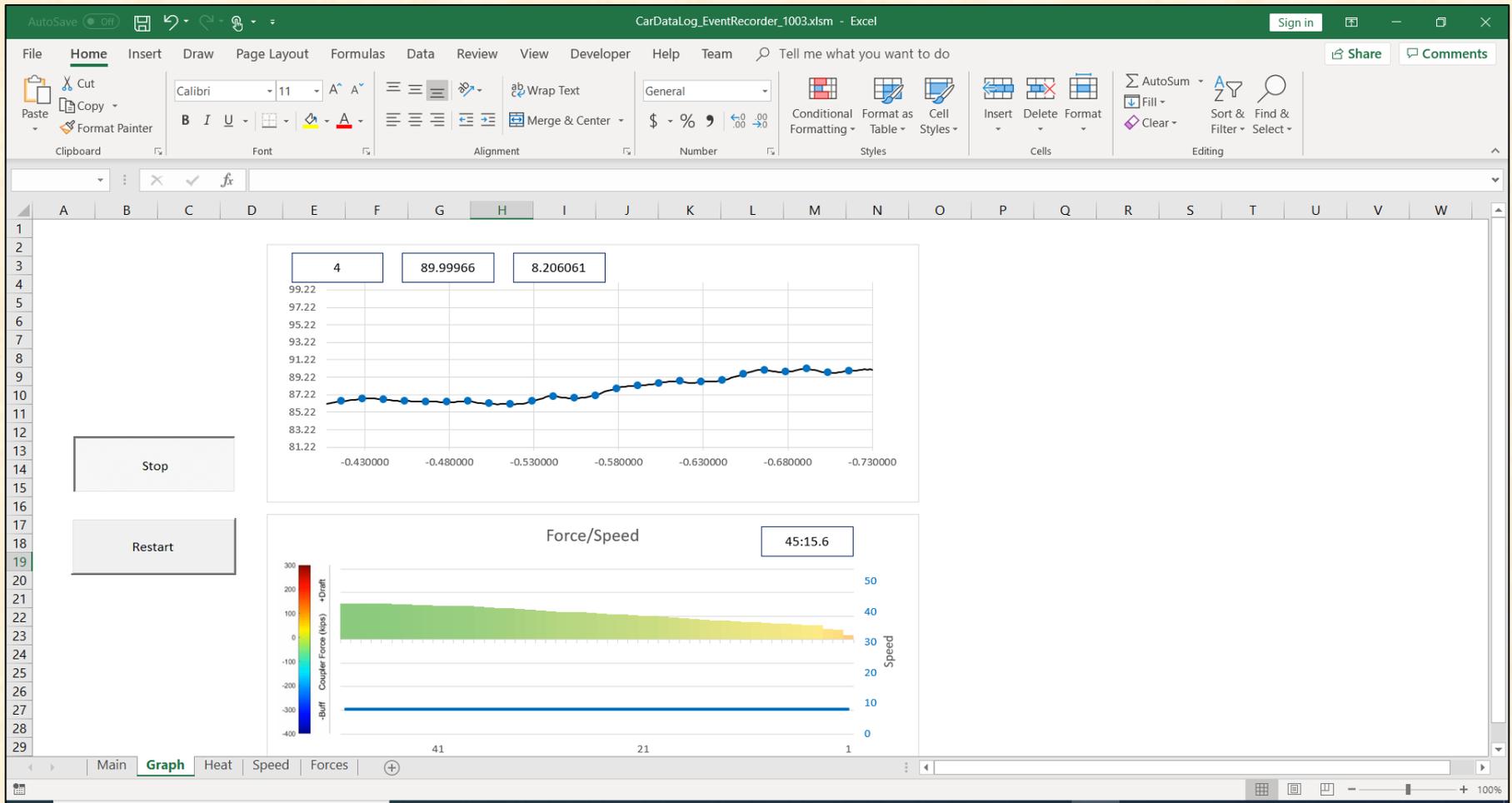
Web UI Graph Component: Forces



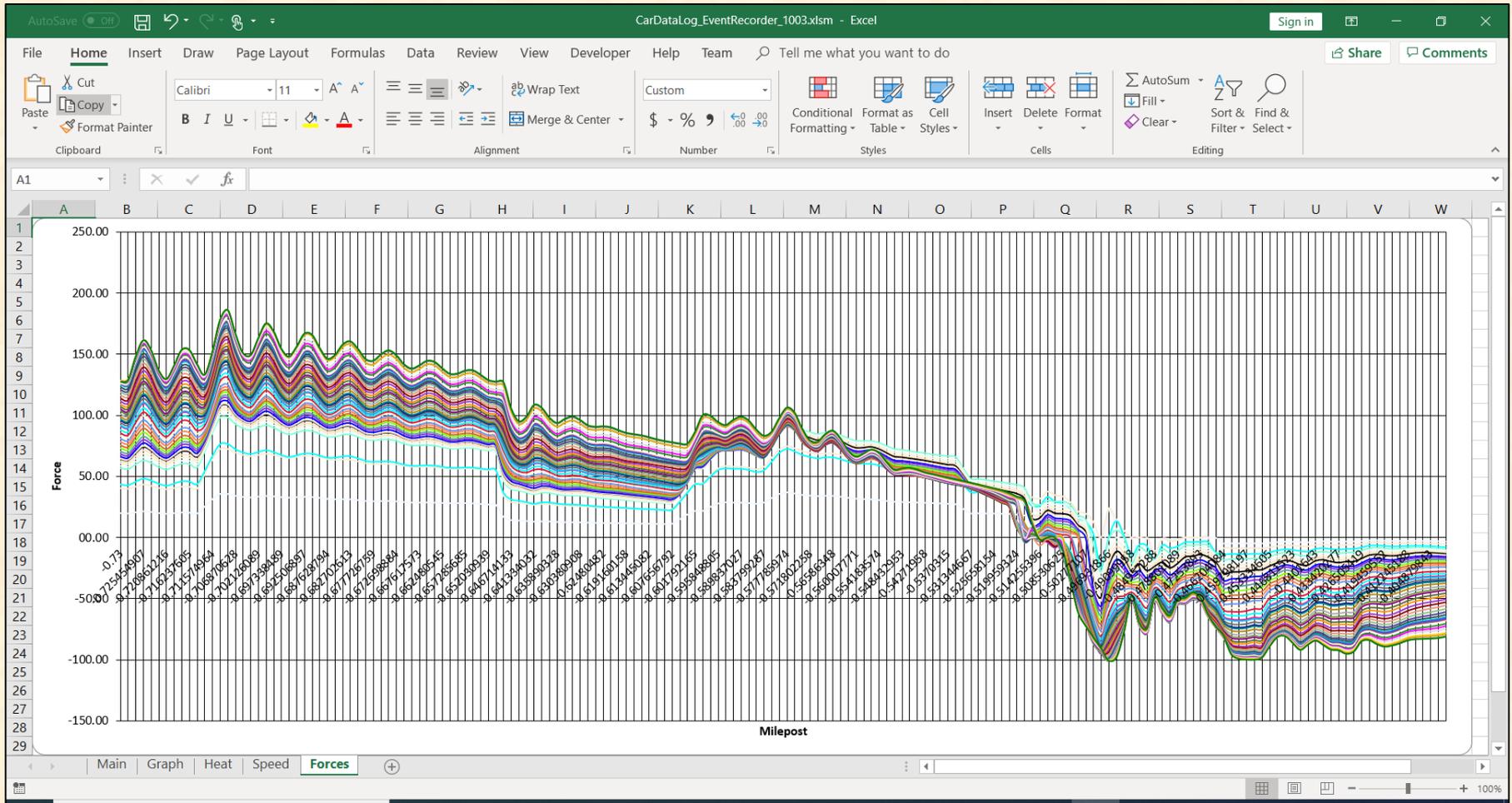
Web UI Graph Component: Animated elevation graph



Excel file: Animated graphs



Excel file: Forces graph



What's left to do?

- Allow web UI animated graphs to be paused
- Add extra info on web UI as shown on Excel file (speed line, time, throttle)
- Create smoothing functions for animated graphs
- Have validation API check for edge cases
- Validation check fails display error message on web UI not just URL



Questions?

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