Of course. It's been a very productive session. Here is a full summary of all the work we did in this conversation, from the initial UI tweaks to the final critical bug fixes.

**Summary of Work Completed**

We conducted a comprehensive refactoring and feature enhancement of the LalaLaunch plugin's Fuel and Profiles tabs. The work progressed from initial cosmetic UI adjustments to implementing new dynamic features and resolving critical data integrity bugs.

**1. UI Layout & Alignment**

The user interface was significantly reorganized for clarity, consistency, and better use of space.

* **Main Section Reorganization:** The "PRE-RACE PLANNER" was restructured into two logical columns: **"Car and Track Parameters"** and **"Race Strategy"**. All controls were moved and reordered to fit these new categories.
* **Control Alignment:** The "Est Avg Lap Time" and "Fuel per Lap" sections were rebuilt using a unified multi-column Grid layout. This ensures perfect vertical alignment of their titles, input boxes, buttons, and informational text fields.
* **Pace Slider Layout:** The "Your Pace vs Leader" and "Race Pace vs PB" sliders were initially stacked vertically to save space, and their layout was later refined into a single Grid to guarantee their widths are always identical.

**2. Dynamic UI Features & Logic**

We added several new features to make the UI more interactive and informative.

* **Conditional Slider:** The "Race Pace vs PB" slider is now conditionally enabled via the IsPaceVsPbSliderActive property, only becoming active when the "Est Avg Lap Time" source is the Personal Best (PB).
* **Helper Text:** Dynamic helper text ("Avg Delta to...") was added under the pace sliders. The C# logic was implemented to calculate these deltas in real-time, and the final UI places this text inline with the slider titles for a cleaner look.
* **Max Fuel Highlight:** A feature was implemented to provide a visual warning when the MaxFuelOverride value exceeds the car's detected maximum fuel. This was achieved by applying a DataTrigger to the "(Detected Max:...)" TextBlock to change its color.

**3. Live Data Mining & Calculation Engine**

The backend logic that processes live data was significantly enhanced.

* **Class Leader Pace Tracking:** New logic was added to LalaLaunch.cs to track the multi-class leader's pace. It uses the iRacingExtraProperties plugin to find the class leader and maintains a 3-lap rolling average of their lap times.
* **Outlier Rejection:** The live average calculations for both the player's pace and the leader's pace were hardened to filter out unusually slow laps, providing more accurate and stable "Avg Delta" hints.
* **"MAX" Fuel Per Lap:** The "MAX" button was fully implemented. The plugin now tracks the highest valid (non-outlier) fuel consumption figure seen during a session and exposes it to the UI.
* **BoP Correction:** A bug was fixed in the "Detected Max" fuel calculation to ensure the Balance of Performance percentage (DriverCarMaxFuelPct) is always correctly applied to the car's base tank size.

**4. Data Persistence & Integrity (Bug Fixing)**

We identified and resolved several critical bugs related to saving and loading data.

* **Car Mis-assignment on Save:** The "Save All to Profile" button logic was corrected. It now saves data to the profile of the **live car** from telemetry, not the car that happens to be selected in the UI, preventing data corruption.
* **Personal Best (PB) Saving:** The save logic was updated to ensure that a newly detected PB is correctly saved to the JSON file, both with the manual "Save" button and automatically when SimHub is closed.
* **Duplicate Track Creation:** The "drifting key" bug was resolved by enhancing the EnsureTrack() method. It now enforces canonical keys and names when finding a track record, which prevents the creation of duplicate entries for the same track.
* **UI Refresh Gaps:** A series of fixes were implemented to resolve UI refresh issues. The Profiles tab's track list and the Fuel tab's info texts now update instantly after a save or when new live data (like a PB) is detected.

Through these iterative changes, the Fuel and Profiles tabs are now more logically organized, visually consistent, and robust. The underlying data mining and persistence logic has been significantly hardened to ensure data integrity and provide a reliable user experience.