



Penalty Explainer Tool

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What happened 3 days ago?

Several drivers cut corners to avoid crashes or gain advantages on track, but only one of them was given a 10 sec penalty



FIA FORMULA 1 WORLD CHAMPIONSHIP



2025 MEXICO CITY GRAND PRIX 24 - 26 October 2025

From	The Stewards	Document	36
To	The Team Manager, Scuderia Ferrari HP	Date	26 October 2025
		Time	16:07

The Stewards, having received a report from the Race Director, have considered the following matter and determine the following:

No / Driver 44 - Lewis Hamilton
Competitor Scuderia Ferrari HP
Time 14:10
Session Race
Fact Car 44 left the track and gained a lasting advantage.
Infringement Breach of Article 33.3 of the FIA Formula One Sporting Regulations.
Decision 10 second time penalty.

The New York Times

Lewis Hamilton: 'Pretty nuts' to be only F1 driver penalized for Mexico GP corner cutting - The Athletic



Lewis Hamilton questions the officiating decisions in the 2025 Mexico City GP, where he was penalized during a battle with Max Verstappen.

1 day ago

r/formula1 · hace 2 d

[RaceFans] George Russell criticised the stewards' decision to issue no penalties after five drivers cut the first corner at the start of the Mexican Grand Prix

3,7 mil votos · 841 comentarios



The F1 community struggle to understand why certain drivers are penalized while others aren't, as the decisions that the FIA* makes seem inconsistent.

Verstappen & Hamilton in FIA DRAMA! 🔥 (Mexico GP)

F1 News - TacticalRab 84.5K subscribers Join Subscribe

77K views 1 day ago #Formula1 #F1 #F12025

Lando Norris re-takes the championship lead with a dominant victory in Mexico, with Max Verstappen third behind Charles Leclerc in a chaotic affair. Lewis Hamilton was frustrated with the stewards' decision to enforce a 10-second penalty.
...more

The Mexican Grand Prix delivered chaotic racing and controversial stewarding decisions. Multiple drivers, including Verstappen and Hamilton, engaged in intense on-track... ▶ Summary

1,145 Comments Sort by

Our tool demystifies F1 race penalties by explaining them in plain language and assessing their fairness using historical data and official FIA regulation.

The screenshot shows the F1 PENALTY INSIGHTS tool interface. At the top, there's a banner with a checkered background featuring a red racing flag icon, the text "F1 PENALTY INSIGHTS", "AI-Powered Analysis - LLM-Driven Insights - Intelligent Penalty Assessment", and a subtext about turning confusing FIA penalty docs into simple explanations with AI. Below the banner, there are three main tabs: "Penalty Analysis" (highlighted in red), "Race Statistics", and "Penalty Analysis Chat".

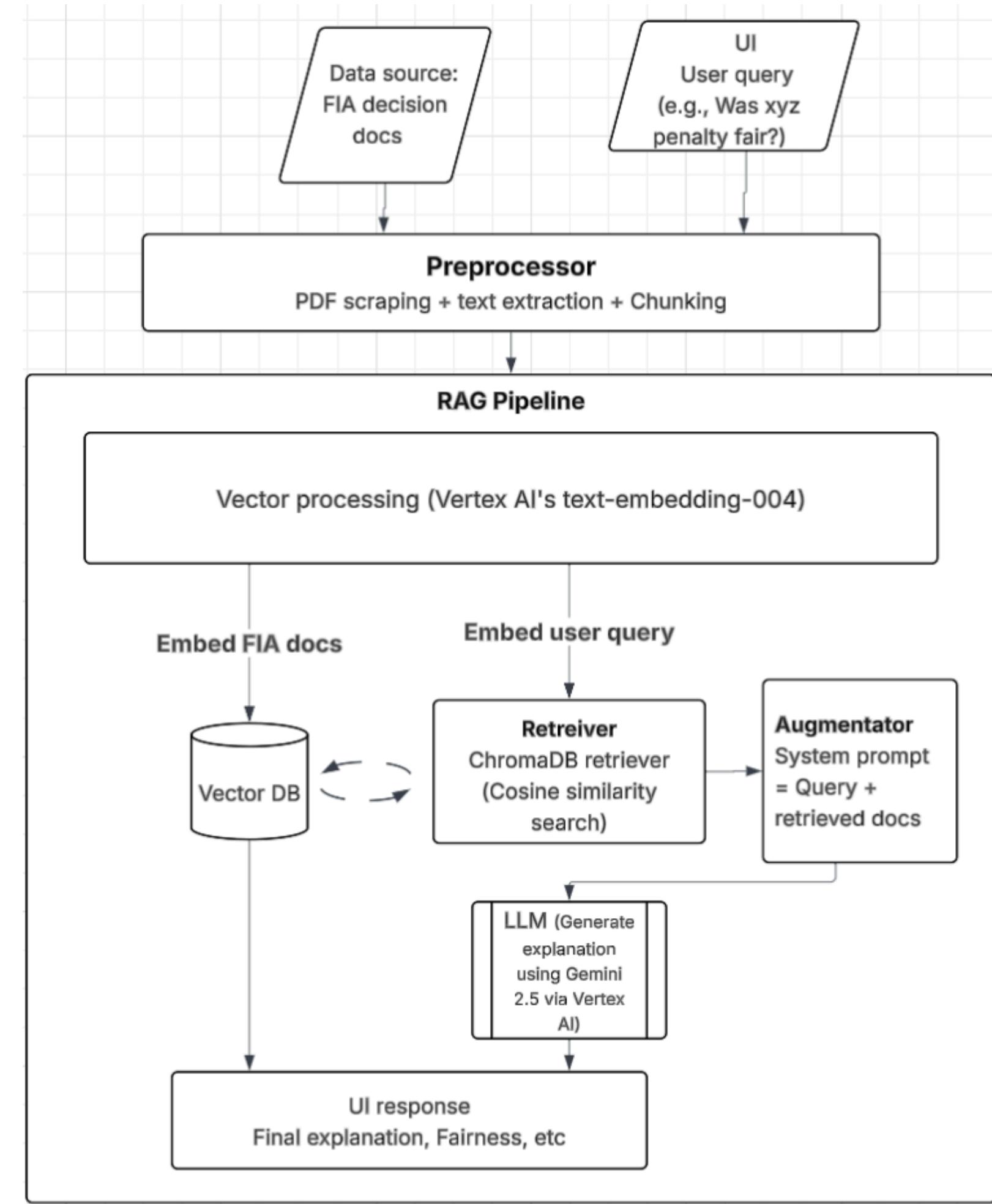
The "Penalty Analysis Chat" section contains a welcome message: "Welcome! Ever wonder why a driver got a penalty?", followed by "Feeling unfair for the punishment received by your favorite driver?", and "I am here to break down any incident in simple terms. I use powerful LLM to check the official FIA rules and past penalties to see if the call was fair." It also includes a timestamp "07:21 PM" and a message "Go ahead, ask me about a driver or a recent race!".

The "Submit Penalty for Analysis" section shows a file upload area with the text "2025 Mexico City Grand Prix - Infringement - Car 44 - Leaving the track and gaining an advantage.pdf" and a "Click to change file" link. Below this is a red "Analyze Penalty" button.

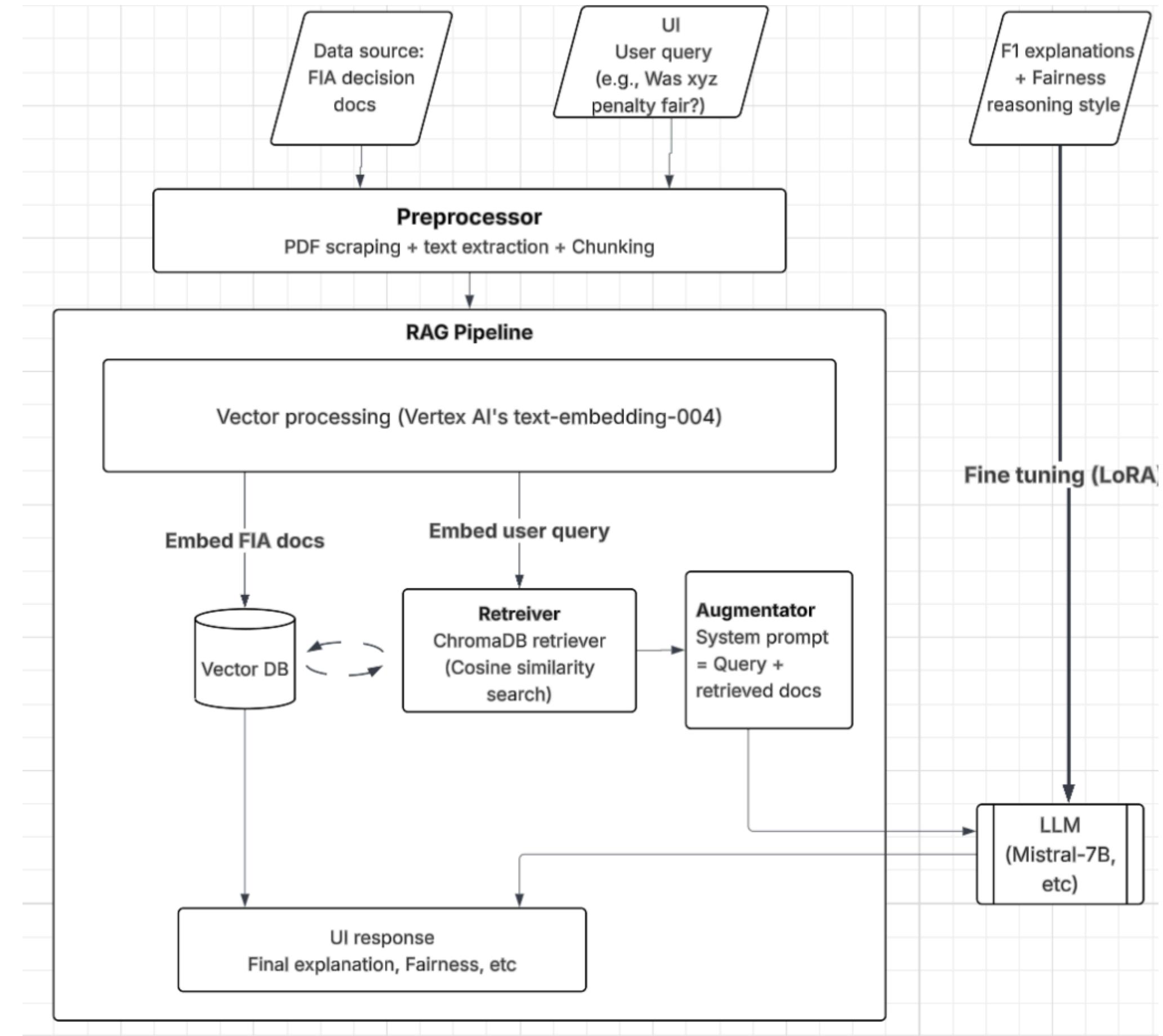
At the bottom, there's a text input field with placeholder text "Ask me to explain any penalty in plain language..." and a note "Try: 'Explain Verstappen's penalty at Turn 4 in simple terms' or 'Was Hamilton's 10-second penalty fair based on FIA regulations?'". A status bar at the bottom right indicates "File '2025 Mexico City Grand Prix - Infringement - Car 44 - Leaving the track and gaining an advantage.pdf' selected".



Infrastructure (Current Implementation)



Infrastructure (Next steps)



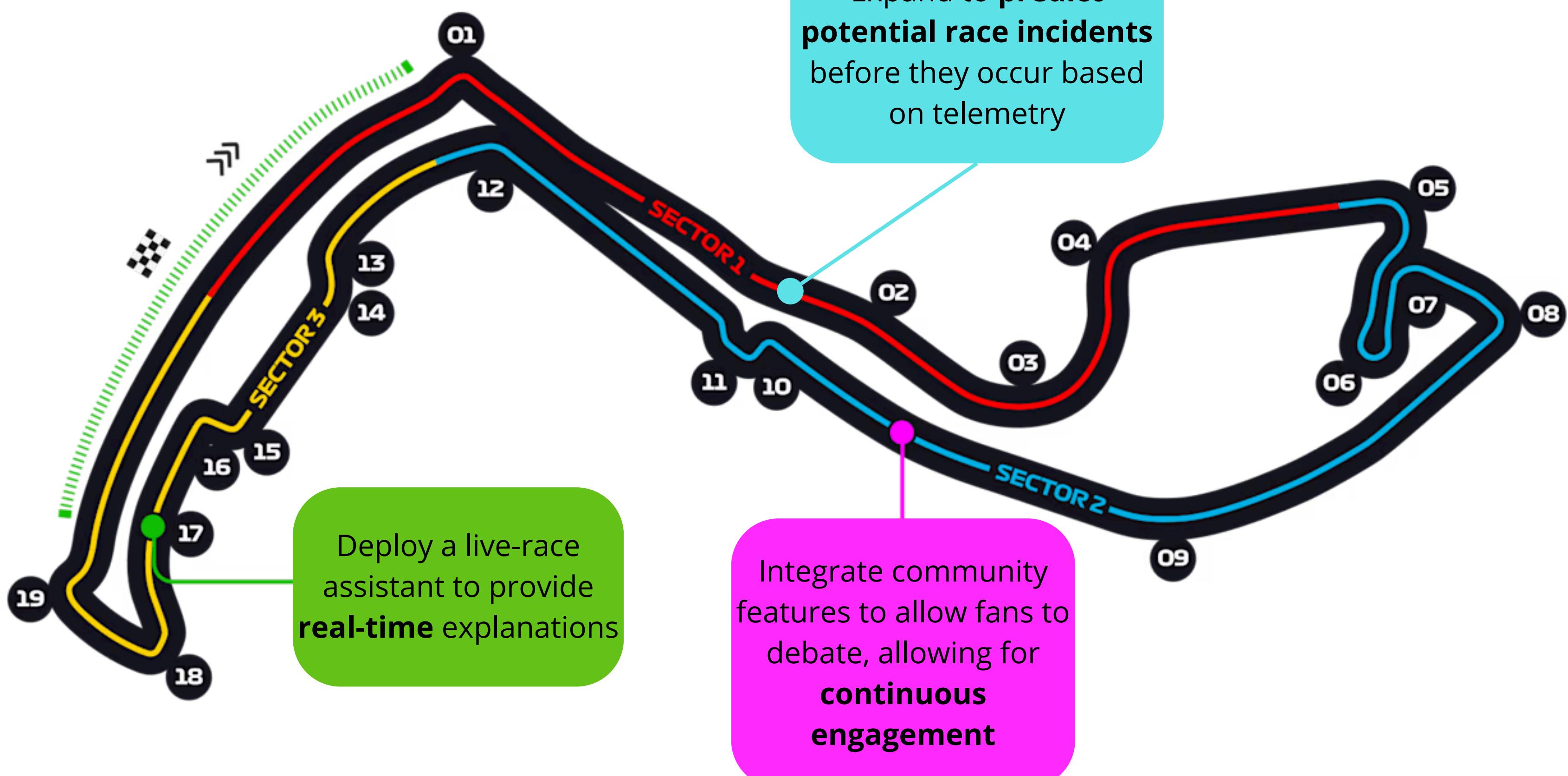
Scalability

- **Containerized Workflow via Docker & Kubernetes:** Will allow for automatic scaling during race-weekend data surges.
- **Data versioning:** Newly released FIA race and penalty data are automatically incorporated each weekend.

Performance

- **RAG Pipeline:** Using FIA penalty docs to enable more context-aware explanations grounded in official race decisions.
- **Vertex AI Embeddings + Chroma DB:** Ensure low-latency semantic search and scalable vector retrieval.

Roadmap



Market Growth



Sports Expansion

Extend framework to other data-driven sports

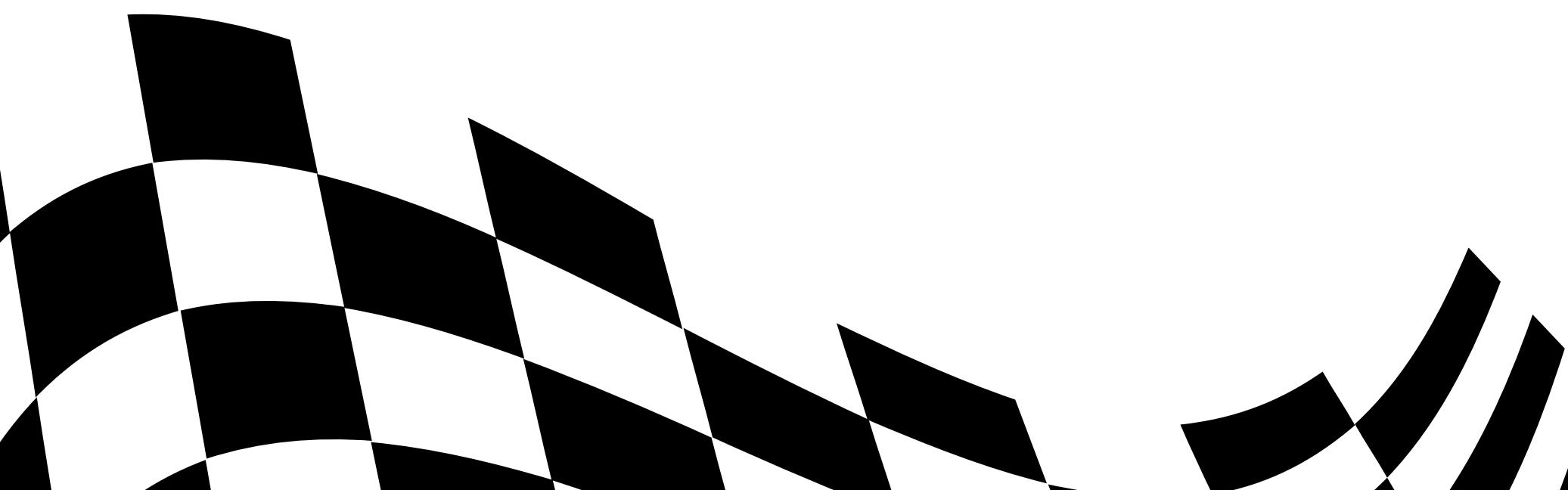
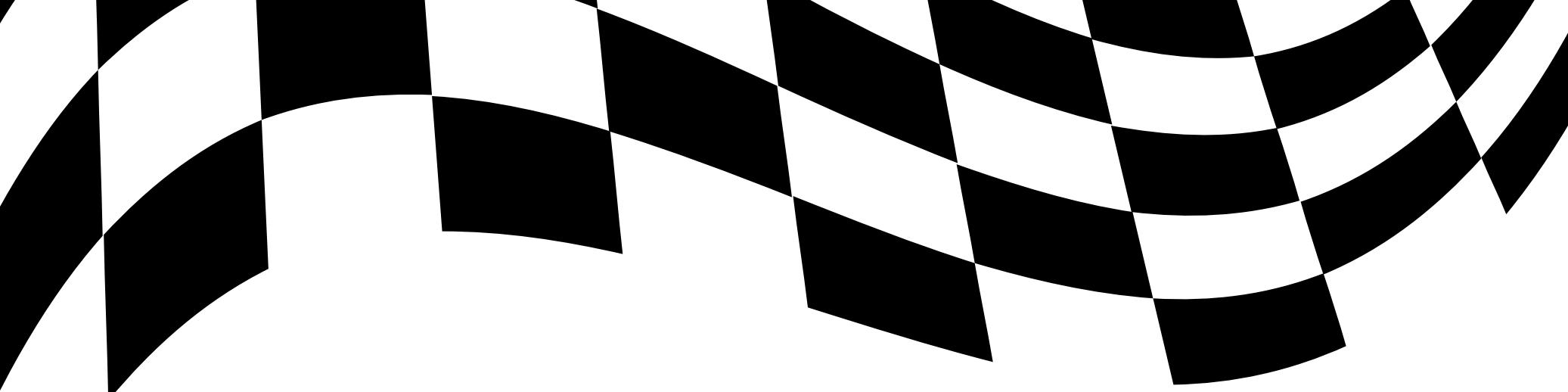


Media Partnerships

Collaborate with broadcasters to embed the tool as a live analysis feature

Data Licensing

Offer analytics to teams and commentators seeking insights on race fairness



826 million
Formula One fans globally

\$16.7 billion
Total commercial value of the
motorsports market by 2033

Our goal is to make racing more transparent, giving every fan, driver, and team a clear view into the decisions that shape the sport they love.



Thank you!
Questions?

Appendix

Technical Decisions - RAG



Chunking

Recursive character splitting

Enables hierarchical document chunking (paragraphs → lines → words) to maintain the doc structure



Embedding

Vertex AI's text-embedding-004

Connects with GCS and can handle thousands of FIA race documents,



Metadata

No metadata creation in ChromaDB

File names lack categorical data, we're postponing metadata integration until we assess its value

Data Pipeline



Scraping

Collect FIA race documents from the official Formula 1 website, organized by season and event

PDF to TXT conversion

Converts PDF documents into txt files, making the information easy to analyze and ready for use in the RAG model

Storage & Versioning

Upload txt files to Google Cloud Storage, enabling future data versioning as new races occur

Competitive Advantage

Formula One is leveraging data and AI focused on race telemetry and car performance but rarely focus on regulatory transparency or penalty judgement.





Existing Solutions



F1 Regulations Assistant

By alpyalay.org +1

I help users understand F1 regulations, focusing on the 2024 rules, by providing clear, concise, and detailed explanations from official FIA documents. I can also analyse images, and tell if they're within regulations or not. Now connected to openf1.org, you can

Can you calculate the potential aerodynamic dra...

What's the difference between soft, medium, an...

How did the introduction of hybrid engines in...

Analyze the race incidents in the current race.

How Red Bull is using Artificial Intelligence in Formula 1

Challenging penalties

The most recent high-profile penalty appeal in F1 came at the 2024 United States Grand Prix when McLaren's Lando Norris was penalised five seconds for "leaving the track and gaining an advantage" in his battle with eventual drivers' champion Max Verstappen of Red Bull.

The FIA's regulations stipulate which sporting penalties cannot be appealed and the International Sporting Code gives teams a 30-minute window to lodge a protest after the provisional classification has been published.

To help it process the regulations, previous breaches of rules and generate swift responses, Red Bull now uses Oracle's GenAI technology that consists of a large language model (LLM) and retrieval-augmented generation (RAG).

Custom ChatGPT

F1 Team Professional Use (not open sourced)