Can I Predict an F1 Winner?

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Asking the Big Question

Formula 1 isn’t just speed; it’s strategy, pit stops, weather, and surprise DNFs.

Can machine learning predict a winner based on patterns in the data?

Goal: Use historical data to simulate race outcomes and make it visual.

Defining My Role

I acted as the full-stack project owner, from data scraping to model deployment.

Tasks included:

Gathering the Data

- Source: Ergast API (2018–2024 seasons)
- Extracted:

Race results

Drivers

Constructors

Circuits

- Created 15,000+ driver-race rows after merging & cleaning

Designing the Right Features

Engineered 5 key features:

Grid Position: Starting advantage

Average Finish: Season consistency

Win Ratio: Recent form

Constructor Avg. Points: Car/team strength

Circuit-Specific History: Track familiarity

Training the Model

Model: Random Forest Classifier

Handles nonlinear interactions

Built-in feature importance

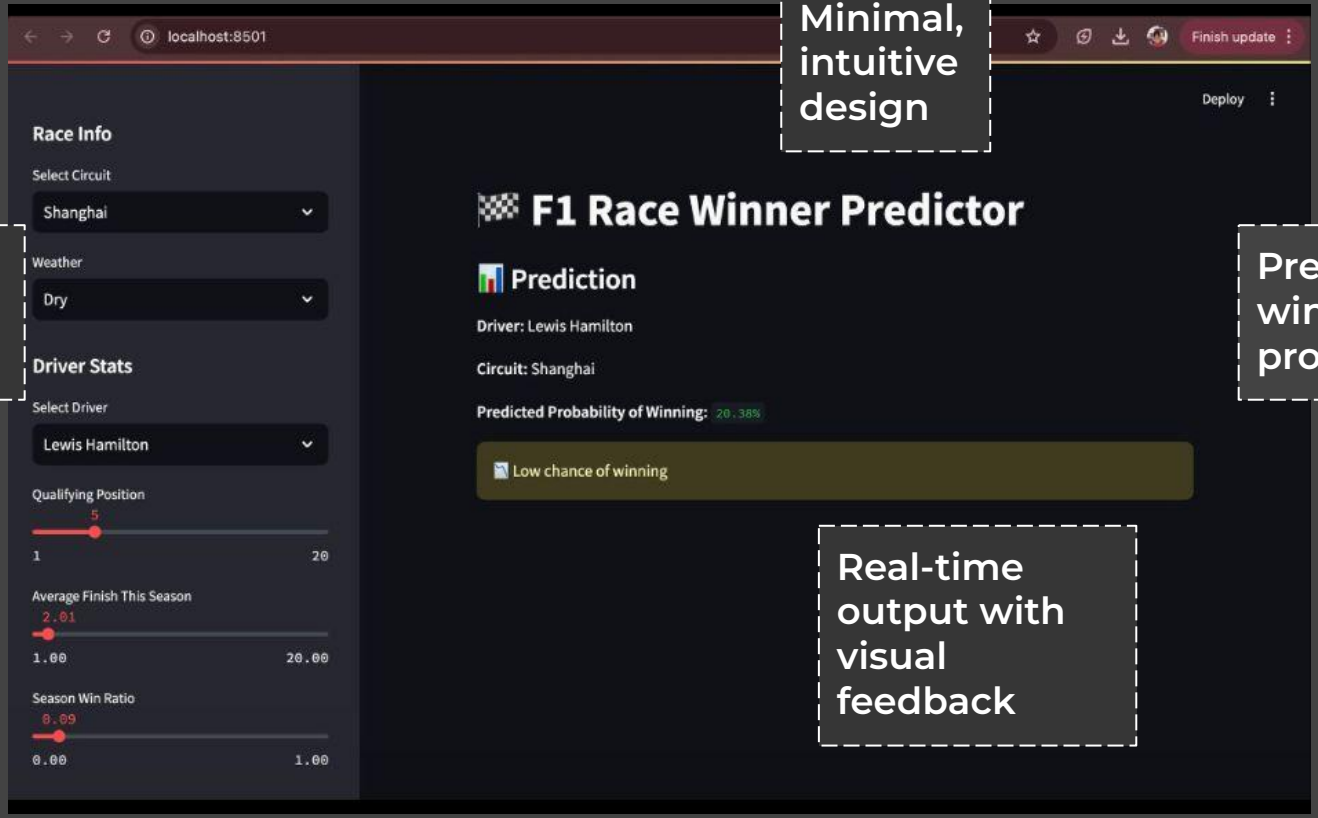
Robust to outliers

- Achieved approx. 85% accuracy
- Top predictors: Grid position, constructor stats, circuit history

Making It Interactive

Minimal, intuitive design

Select driver + race



Predicts win probability

Real-time output with visual feedback

Reflecting on the Process

Key Takeaways

Feature engineering is 50% of model success

Prediction ≠ certainty (rookies, weather, etc.)

Streamlit makes deployment accessible

Building explainable tools > chasing perfect accuracy