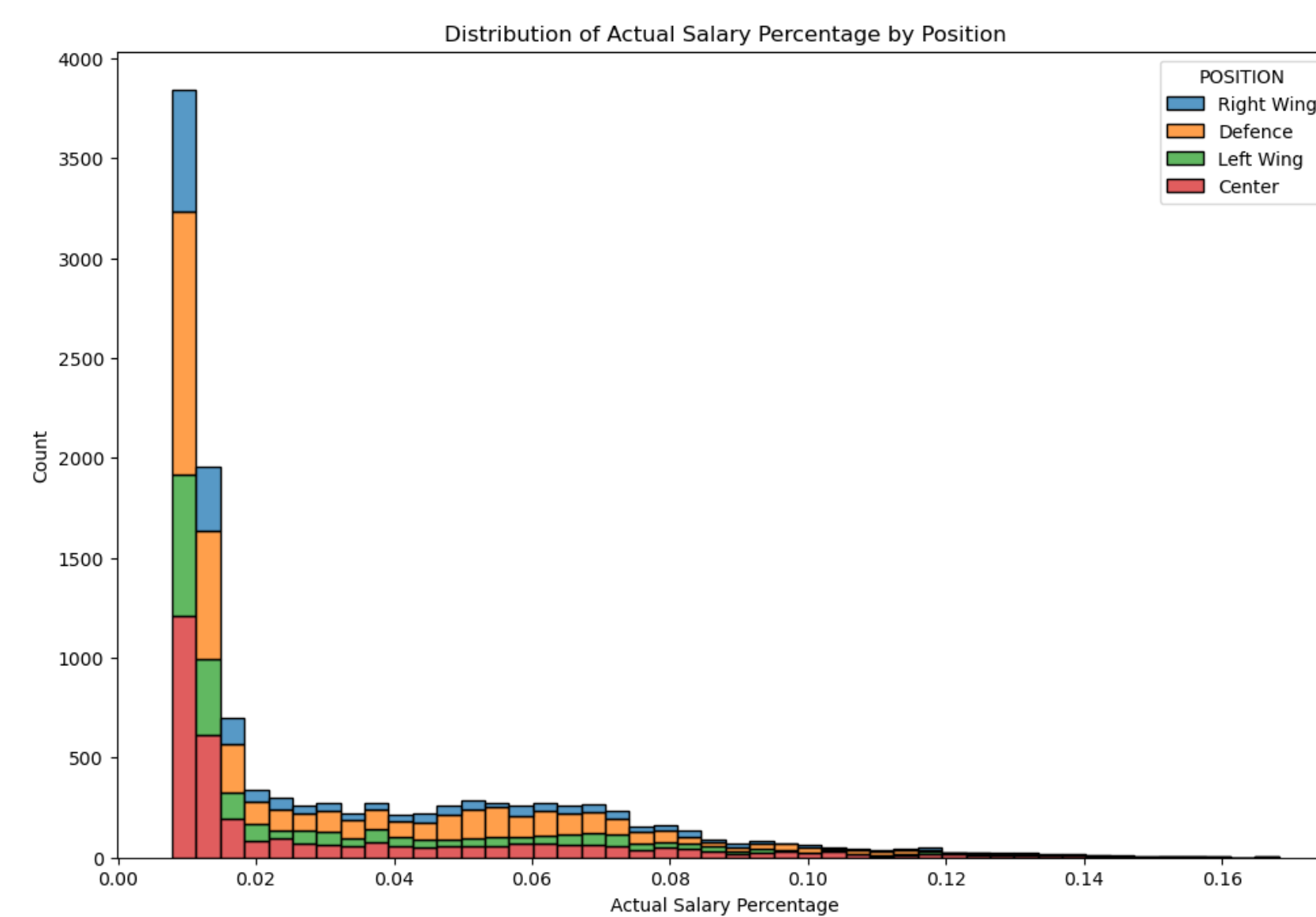


NHL Player Valuation: Determining Value from Performance

Michael Kuby, Sangmun Kim, Yuyang Chen, Haichen Sun

1. MOTIVATION: A RESULTS-BASED BUSINESS

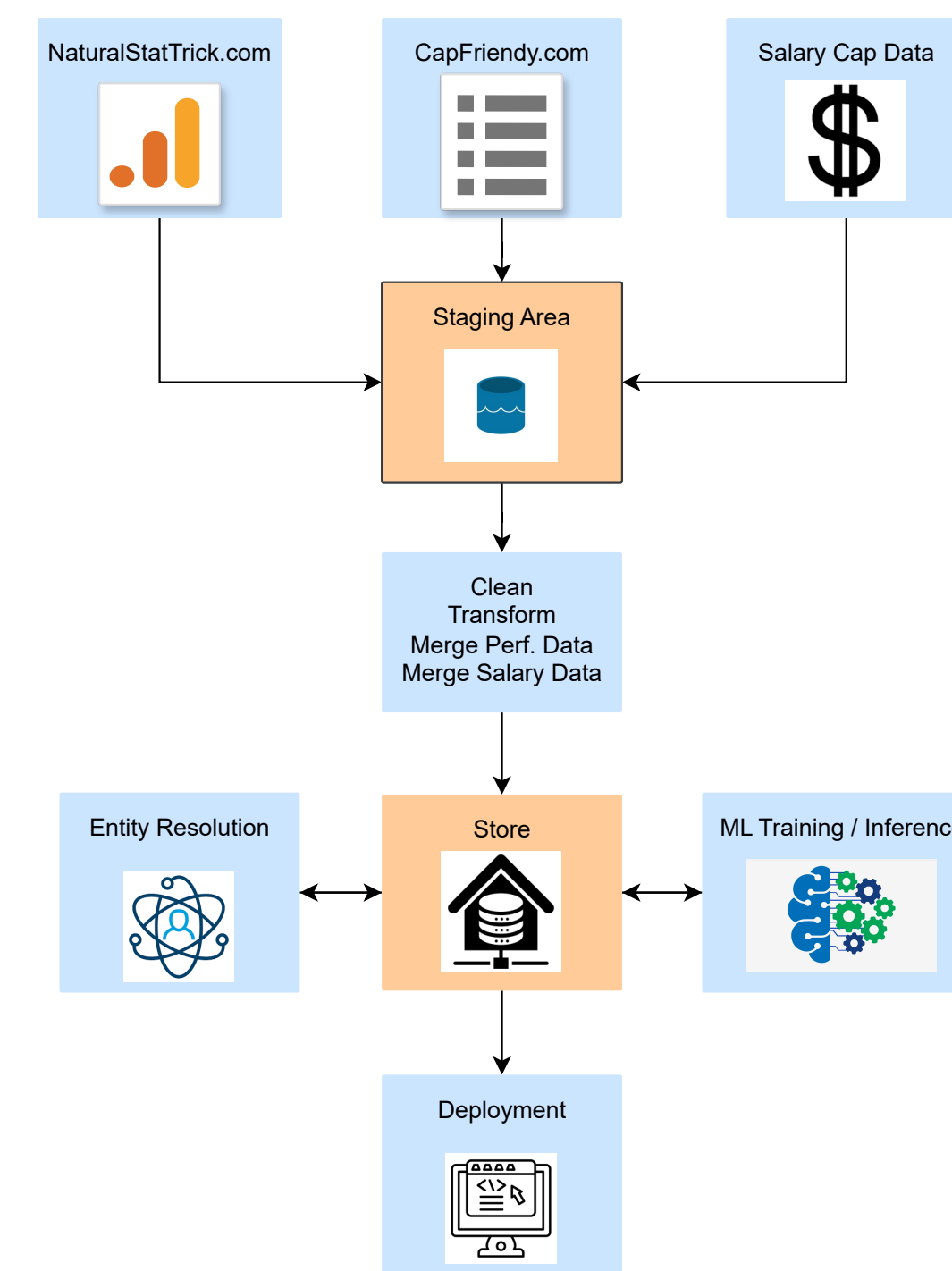
Numerous standard and advanced metrics track NHL player performance. Actual “cost” to roster a player ranges from ~1% to ~16% of the salary cap per year. Can we predict a player’s salary based on performance metrics? If we can, let that prediction approximate their value. Now we have a system for identifying over and underperforming players: Valuation – Salary > 0 → Overperforming relative to “cost.”



2. METHODOLOGY

1. Data collection: CapFriendly.com & NaturalStatTrick.com
2. Clean, Transform, Mergers
3. Target labels: Player AAV / annual salary cap max
4. Entity resolution: 12152/15219 → 79% success
5. Corr. analysis for Wingers, Centers and Defenceman
6. Model Training (LR + Poly Features, Tree Models)
7. Recursive Feature Elimin. with Cross Val.
8. Inference & Deployment

3. DATA PIPELINE

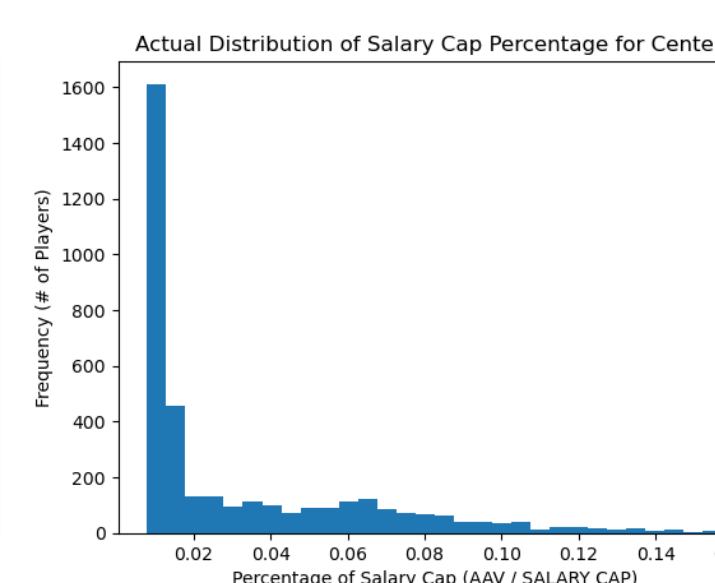
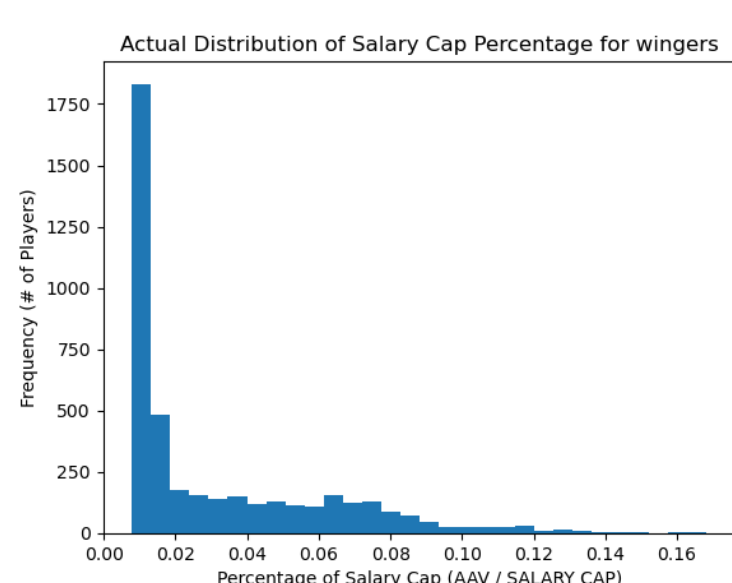
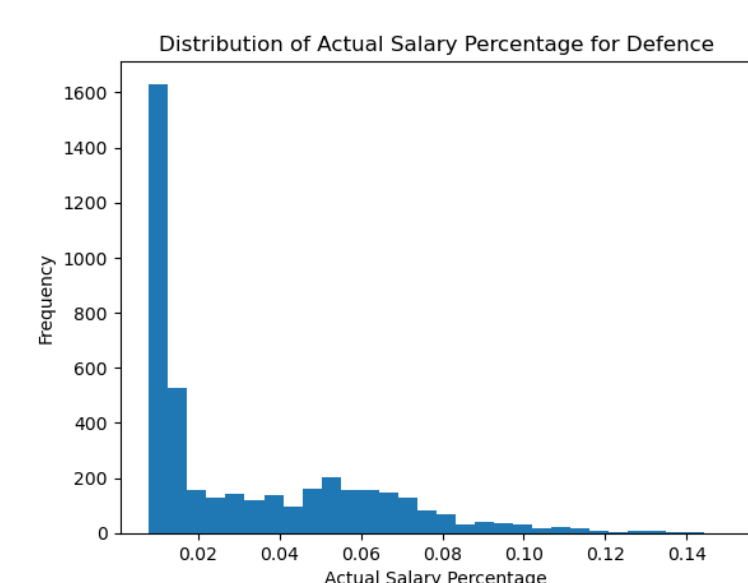
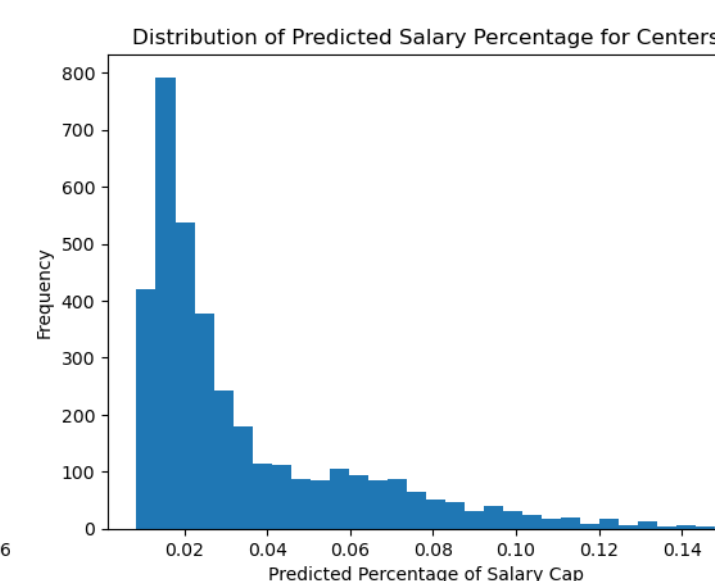
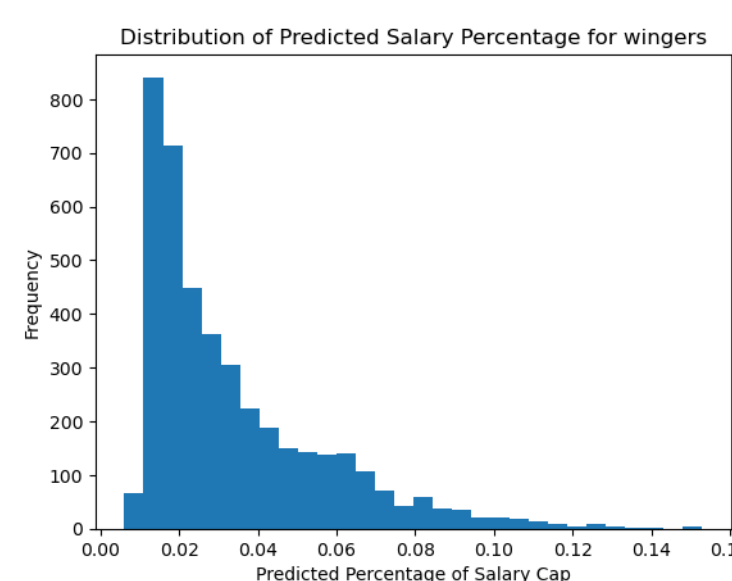
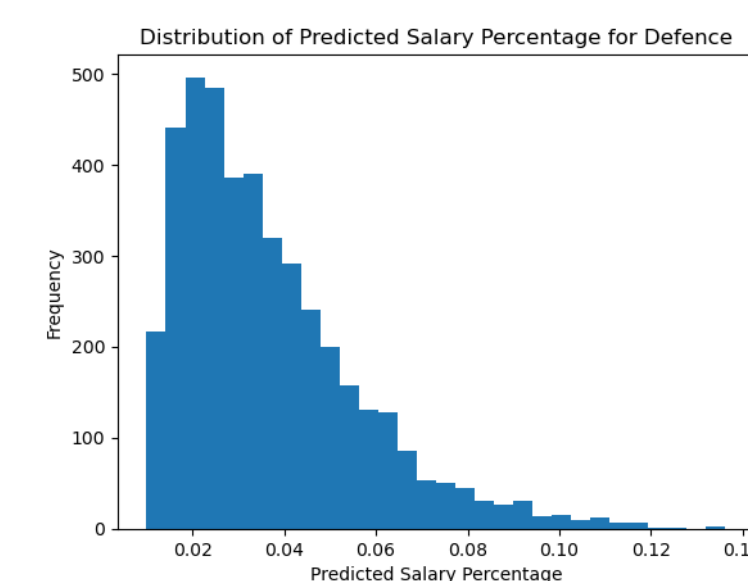


4. MODELS: XGB Regression (Tree Models)

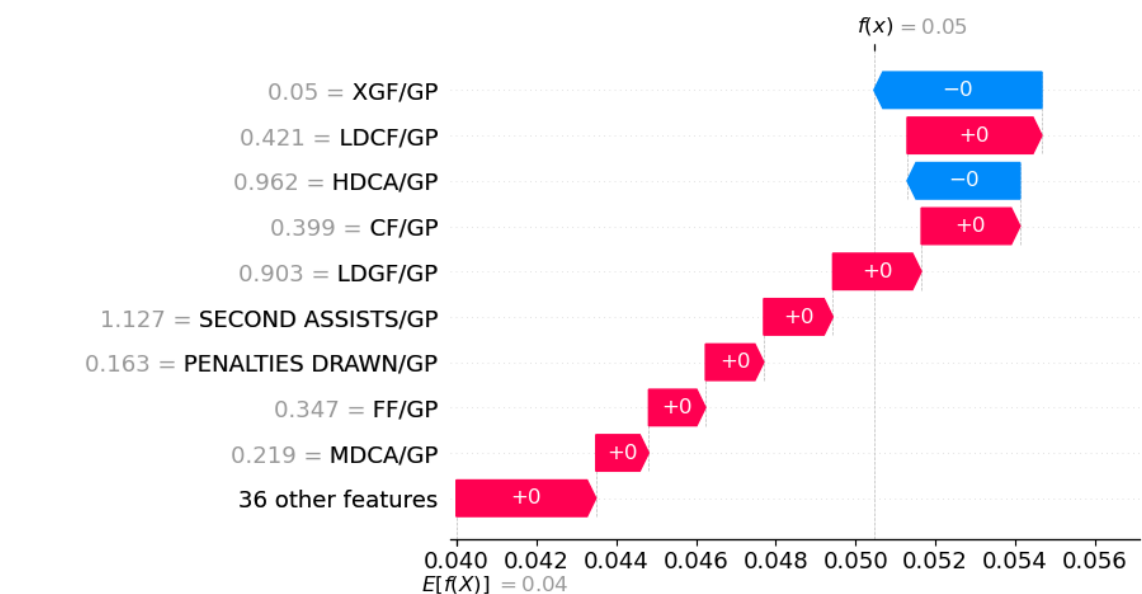
Defence
MSE ≈ 0.00052

Wingers
MSE ≈ 0.00047

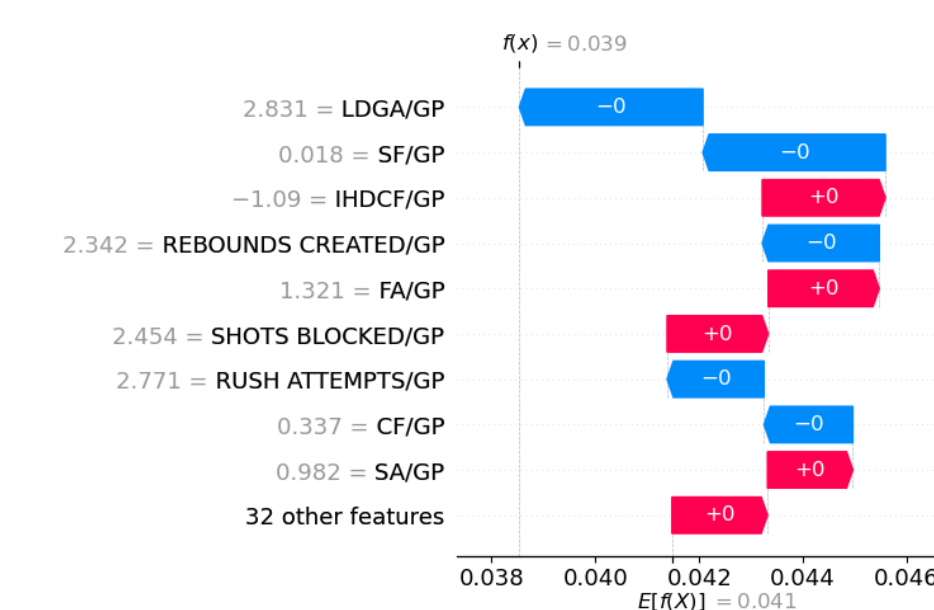
Centers
MSE ≈ 0.00048



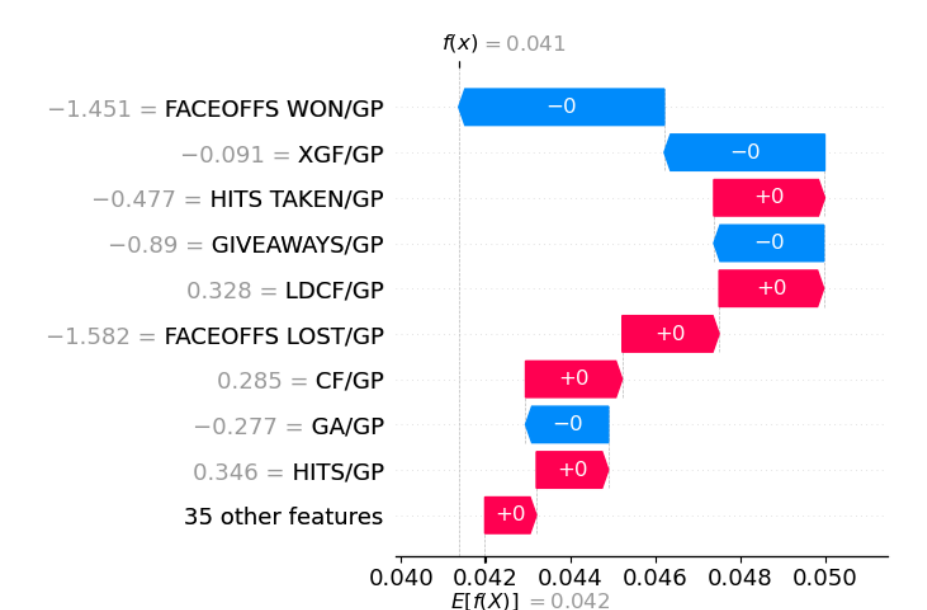
5. MODEL ANALYSIS USING SHAP



Wingers



Defence



Centers

6. DEPLOYMENT

Features:

- Web interface
- Searchable by Player / Team
- Relationships between variables for a wide range of features, including the model predictions

