All features except idgame

Found numeric features ['season', 'week', 'temperature', 'humidity', 'wind', 'streak\_away', 'pass\_yds\_MA\_5\_away', 'pass\_td\_MA\_5\_away', 'rush\_yds\_MA\_5\_away', 'rush\_td\_MA\_5\_away', 'rec\_yds\_MA\_5\_away', 'rec\_td\_MA\_5\_away', 'fumbles\_MA\_5\_away', 'fumbles\_rec\_MA\_5\_away', 'defense\_sacks\_MA\_5\_away', 'defense\_td\_MA\_5\_away', 'interceptions\_MA\_5\_away', 'interceptions\_td\_MA\_5\_away', 'kicks\_return\_yds\_MA\_5\_away', 'kicks\_return\_td\_MA\_5\_away', 'punt\_return\_yds\_MA\_5\_away', 'kicking\_pts\_MA\_5\_away', 'streak\_home', 'pass\_yds\_MA\_5\_home', 'pass\_td\_MA\_5\_home', 'rush\_yds\_MA\_5\_home', 'rush\_td\_MA\_5\_home', 'rec\_yds\_MA\_5\_home', 'rec\_td\_MA\_5\_home', 'fumbles\_MA\_5\_home', 'fumbles\_rec\_MA\_5\_home', 'defense\_sacks\_MA\_5\_home', 'defense\_td\_MA\_5\_home', 'interceptions\_MA\_5\_home', 'interceptions\_td\_MA\_5\_home', 'kicks\_return\_yds\_MA\_5\_home', 'kicks\_return\_td\_MA\_5\_home', 'punt\_return\_yds\_MA\_5\_home', 'kicking\_pts\_MA\_5\_home', 'delta\_day\_away', 'delta\_day\_home', 'people', 'month', 'dayofmonth', 'dayofweek'] Found categorical features ['awayteam', 'hometeam', 'home\_coach', 'away\_coach', 'weather\_type', 'stade', 'location']

Grid search... {'max\_depth': range(2, 10), 'min\_child\_weight': [1, 2, 3], 'n\_estimators': range(60, 220, 40), 'learning\_rate': [0.1, 0.01, 0.05]} Fitting 10 folds for each of 288 candidates, totalling 2880 fits ...Done. Best hyperparameters : {'learning\_rate': 0.1, 'max\_depth': 2, 'min\_child\_weight': 3, 'n\_estimators': 140} Best validation accuracy : 0.6154548476789168 Accuracy on training set : 0.8750056796667929 Accuracy on test set : 0.6648328396106644

All features except {'idgame', 'month'}

Found numeric features ['season', 'week', 'temperature', 'humidity', 'wind', 'streak\_away', 'pass\_yds\_MA\_5\_away', 'pass\_td\_MA\_5\_away', 'rush\_yds\_MA\_5\_away', 'rush\_td\_MA\_5\_away', 'rec\_yds\_MA\_5\_away', 'rec\_td\_MA\_5\_away', 'fumbles\_MA\_5\_away', 'fumbles\_rec\_MA\_5\_away', 'defense\_sacks\_MA\_5\_away', 'defense\_td\_MA\_5\_away', 'interceptions\_MA\_5\_away', 'interceptions\_td\_MA\_5\_away', 'kicks\_return\_yds\_MA\_5\_away', 'kicks\_return\_td\_MA\_5\_away', 'punt\_return\_yds\_MA\_5\_away', 'kicking\_pts\_MA\_5\_away', 'streak\_home', 'pass\_yds\_MA\_5\_home', 'pass\_td\_MA\_5\_home', 'rush\_yds\_MA\_5\_home', 'rush\_td\_MA\_5\_home', 'rec\_yds\_MA\_5\_home', 'rec\_td\_MA\_5\_home', 'fumbles\_MA\_5\_home', 'fumbles\_rec\_MA\_5\_home', 'defense\_sacks\_MA\_5\_home', 'defense\_td\_MA\_5\_home', 'interceptions\_MA\_5\_home', 'interceptions\_td\_MA\_5\_home', 'kicks\_return\_yds\_MA\_5\_home', 'kicks\_return\_td\_MA\_5\_home', 'punt\_return\_yds\_MA\_5\_home', 'kicking\_pts\_MA\_5\_home', 'delta\_day\_away', 'delta\_day\_home', 'people', 'dayofmonth', 'dayofweek'] Found categorical features ['awayteam', 'hometeam', 'home\_coach', 'away\_coach', 'weather\_type', 'stade', 'location']

Grid search... {'max\_depth': range(2, 10), 'min\_child\_weight': [1, 2, 3], 'n\_estimators': range(60, 220, 40), 'learning\_rate': [0.1, 0.01, 0.05]} Fitting 10 folds for each of 288 candidates, totalling 2880 fits ...Done. Best hyperparameters : {'learning\_rate': 0.1, 'max\_depth': 2, 'min\_child\_weight': 3, 'n\_estimators': 100} Best validation accuracy : 0.6163565556783641 Accuracy on training set : 0.8458576296857251 Accuracy on test set : 0.6604497914273623

Removing all calculated features

Found numeric features ['season', 'week', 'temperature', 'humidity', 'wind', 'month'] Found categorical features ['awayteam', 'hometeam', 'home\_coach', 'away\_coach', 'weather\_type', 'stade', 'location']

Grid search... {'max\_depth': range(2, 10), 'min\_child\_weight': [1, 2, 3], 'n\_estimators': range(60, 220, 40), 'learning\_rate': [0.1, 0.01, 0.05]} Fitting 10 folds for each of 288 candidates, totalling 2880 fits ...Done. Best hyperparameters : {'learning\_rate': 0.1, 'max\_depth': 2, 'min\_child\_weight': 1, 'n\_estimators': 100} Best validation accuracy : 0.6446485346435479 Accuracy on training set : 0.7828190079515336 Accuracy on test set : 0.6336980835499667

All calculated features only:

Found numeric features ['streak\_away', 'pass\_yds\_MA\_5\_away', 'pass\_td\_MA\_5\_away', 'rush\_yds\_MA\_5\_away', 'rush\_td\_MA\_5\_away', 'rec\_yds\_MA\_5\_away', 'rec\_td\_MA\_5\_away', 'fumbles\_MA\_5\_away', 'fumbles\_rec\_MA\_5\_away', 'defense\_sacks\_MA\_5\_away', 'defense\_td\_MA\_5\_away', 'interceptions\_MA\_5\_away', 'interceptions\_td\_MA\_5\_away', 'kicks\_return\_yds\_MA\_5\_away', 'kicks\_return\_td\_MA\_5\_away', 'punt\_return\_yds\_MA\_5\_away', 'kicking\_pts\_MA\_5\_away', 'streak\_home', 'pass\_yds\_MA\_5\_home', 'pass\_td\_MA\_5\_home', 'rush\_yds\_MA\_5\_home', 'rush\_td\_MA\_5\_home', 'rec\_yds\_MA\_5\_home', 'rec\_td\_MA\_5\_home', 'fumbles\_MA\_5\_home', 'fumbles\_rec\_MA\_5\_home', 'defense\_sacks\_MA\_5\_home', 'defense\_td\_MA\_5\_home', 'interceptions\_MA\_5\_home', 'interceptions\_td\_MA\_5\_home', 'kicks\_return\_yds\_MA\_5\_home', 'kicks\_return\_td\_MA\_5\_home', 'punt\_return\_yds\_MA\_5\_home', 'kicking\_pts\_MA\_5\_home', 'delta\_day\_away', 'delta\_day\_home', 'people', 'dayofmonth', 'dayofweek'] Found categorical features []

Grid search... {'max\_depth': range(2, 10), 'min\_child\_weight': [1, 2, 3], 'n\_estimators': range(60, 220, 40), 'learning\_rate': [0.1, 0.01, 0.05]} Fitting 10 folds for each of 288 candidates, totalling 2880 fits ...Done. Best hyperparameters : {'learning\_rate': 0.01, 'max\_depth': 3, 'min\_child\_weight': 2, 'n\_estimators': 180} Best validation accuracy : 0.599873375184213 Accuracy on training set : 0.8153104884513442 Accuracy on test set : 0.5951272595369083