www.nflplaypredictions.com

Our team has brought the ability to predict NFL plays in real time based on game conditions and play progress to all Monday Morning Quarterbacks. Trained on a decade of individual NFL play by play data, we analyzed over 10 different modeling approaches to determine how to most accurately predict what a coach should do in any given situation. With model features including weather conditions, time left in the game, and distance to go, we can be confident of a data driven decision with any kind of situation. We have deployed this model into a live web app so that you can see for yourself.

COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

MONDAY MORNING QUARTERBACKS

Utilizing a decade worth of individual NFL play by play data to train machine learning models, we evaluated the importance of individual game features including weather conditions to develop and deploy a data driven approach to predicting play calls

ROGER LEFORT, PHD

Neuroscientist and data wrangler with 8+ years of experience spearheading research on central nervous system disorders. Roger has demonstrated expertise in rigorous experimental research design, data collection, statistical analyses and complex data interpretation and visualization.

Project role: Data modeling and analysis lead

www.linkedin.com/in/roger-lefort

WENDY GUO

Senior people consultant in leading global advisory firm specialized in large-scale transformations & transactions. Wendy has extensive experience in storytelling through data. She specialized in providing data-driven insight for workforce strategy and planning, so that talent can be managed and developed to deliver clear business outcomes.

Project role: Data ETL and visualizations lead

www.linkedin.com/in/xiaoqiwendyguo

NELSON LEUNG, MBA

Data and analytics driven executive with 1st party experience across a broad range of disciplines. "Digital Change Agent" guided by three core principles:

1. Innovation – problem solving to drive ROI with technology and analytics
2. Lean Operations – improving efficiency and cost cutting
3. Executional Excellence – data driven decision making and scalability

Project role: Web development and model deployment lead

www.linkedin.com/in/nelsonleungnyc

TECHNOLOGY

MODELING

python

scikit learn

SciPy

Yellowbrick

DEPLOYMENT

Flask

GitHub

jQuery

JavaScript

HEROKU

DATA

NumPy

jupyter

Pandas

VISUALIZATION

tableau

plotly

matplotlib

HTML

CSS

seaborn

SUCCESSES & CHALLENGES

Deploy a fully functional web application that includes a machine learning model to make predictions. Dashboard visualizations and web pages showcasing the analytical rigor applied to build these models. Data ETL and server/API calls also demonstrates the interaction between application and data.

Some fun challenges during our the project included developing Flask server routes to return the needed values in compatible formats. Working with majority open source / free versions of products also come with challenges that would be easily solved in commercial applications. Some examples include dashboards that need to be hosted publicly and storage restrictions limited the amount of models that

We plan to continue to build additional features such as model selection for predictions. Probability models to provide guidance on how likely plays are to convert successfully. Create linear models to provide projections on yardage gains and points scored. Highlight differences in play calls based on actions team records / success.