



Surf Scores

Predicting WSL competition results...





Yew!

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Outline

1

Problem Statement

Can we predict average heat scores in a Championship Tour competition, using only buoy data?

2

Data

Insights from gathering
10+ years of data

3

Results

Data-modeling results, conclusions
and recommendations.

First a little context:

Competitive surfing:

- Highest level **was** the Championship Tour (CT)
- Organized by the World Surf League (WSL)
- Tournament style contests at each major 'break'
- Sum of **two best waves** is the final score
- Judging criteria: 1. Commitment and degree of difficulty, 2. Innovative and progressive manoeuvres, 3. Variety of manoeuvres, 4. Combination of major manoeuvres, 5. Speed, power, and flow





Problem Statement

Can we predict average heat scores in a Championship Tour competition, using only buoy data?



Status Quo



Surf Forecasts

Surfline supplies
very sophisticated
surf forecasts



Human 'Call'

WSL officials
decide to go
based on
forecasts and
qualitative info



Scores?

Scoring potential
is considered
based on
forecasted waves
only

Opportunity!

Predictive models that incorporate scores can be leveraged to optimize for scoring potential, increasing broadcast values.





2

Data

What we found in 14 years of scores
around the world

Data Sources



WSL

Average Scores per
Athlete per Heat,
going back to 2008



NOAA

National Buoy Data Center
historical data for wind and
waves.

Most common 'venues'

1

Pipeline

Over 800 heats
surfied since 2008

3

France

~ 700

2

Gold Coast

~ 700 heats surfed

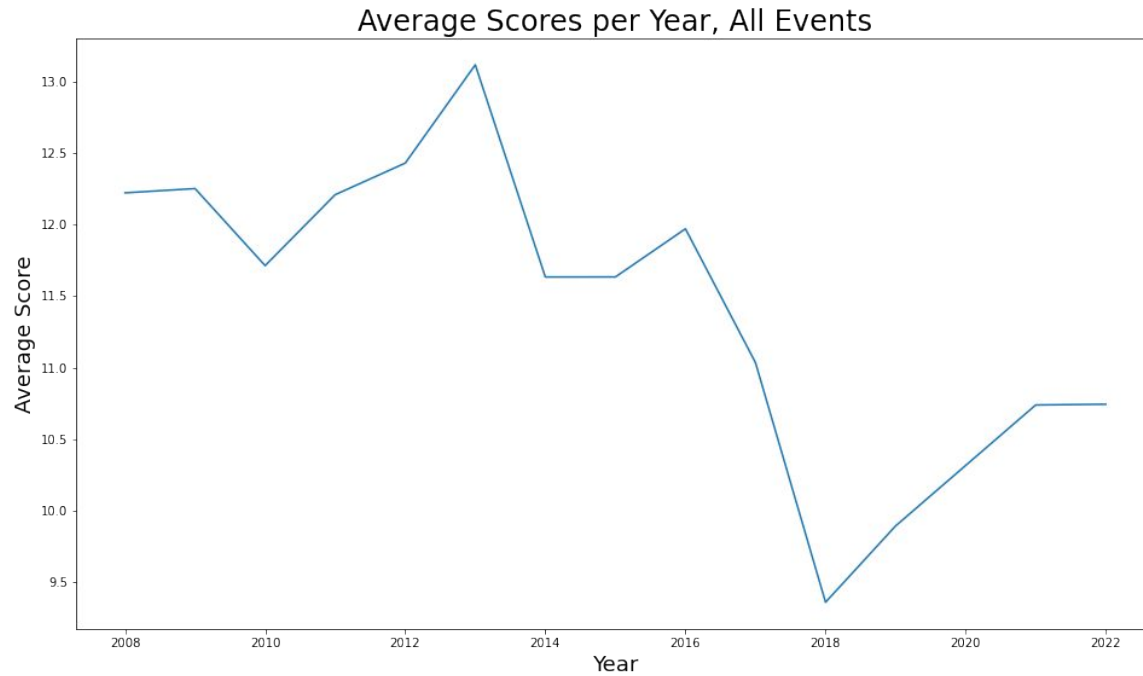
4

Trestles

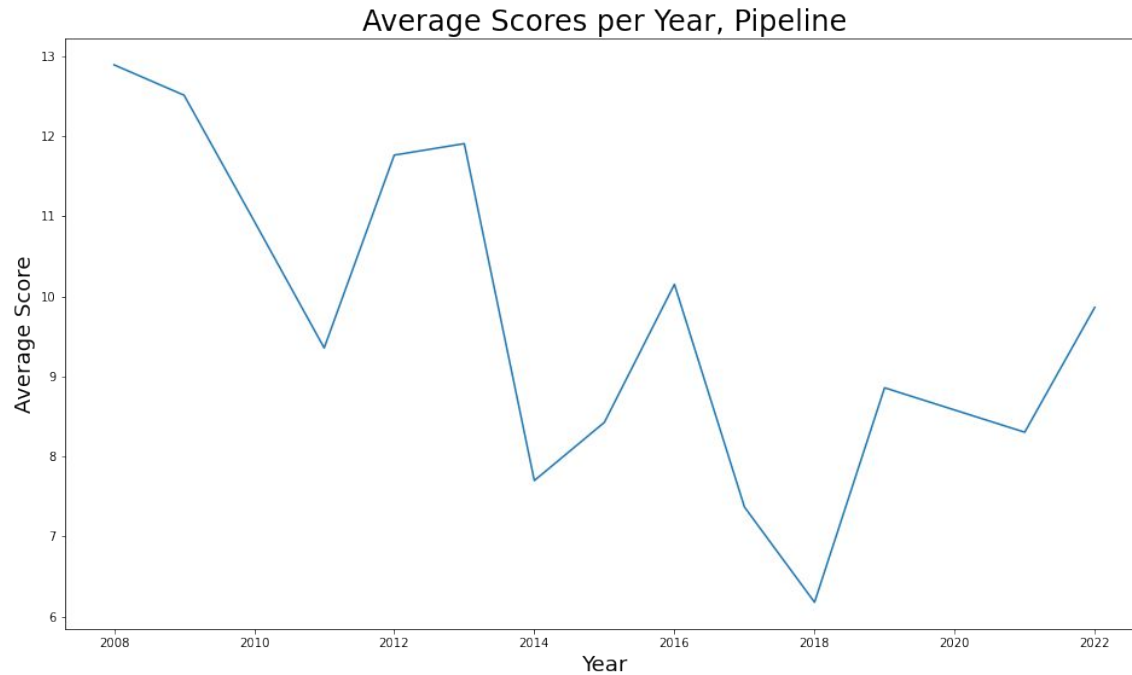
~ 500, with buoy
data



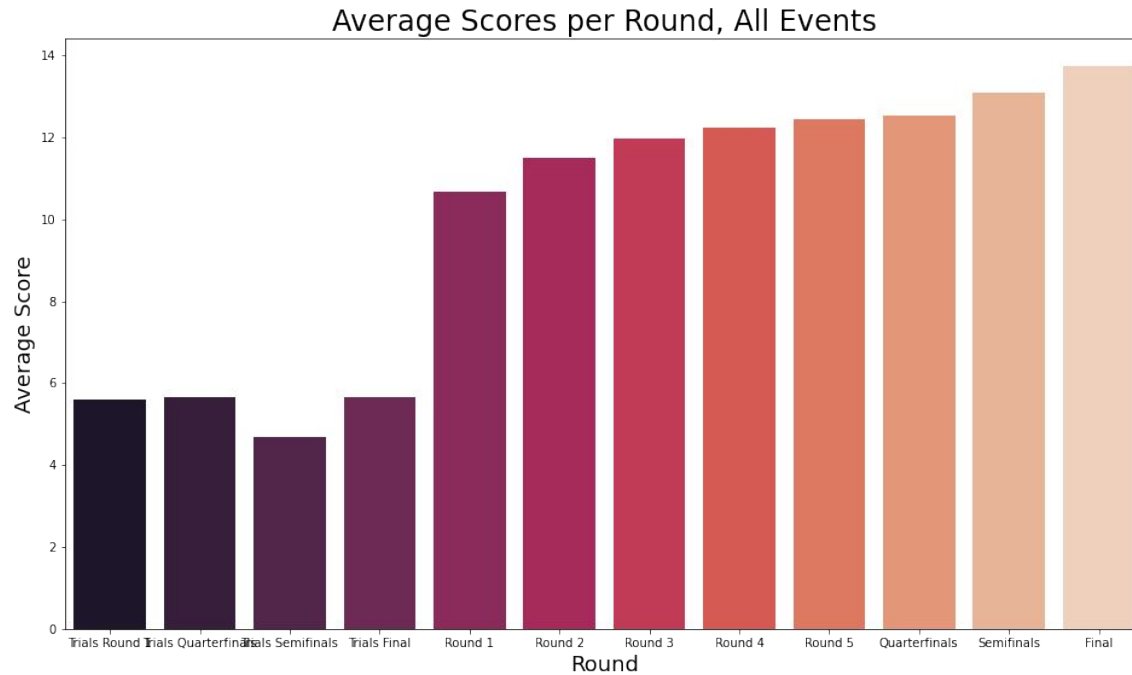
All-time average scores



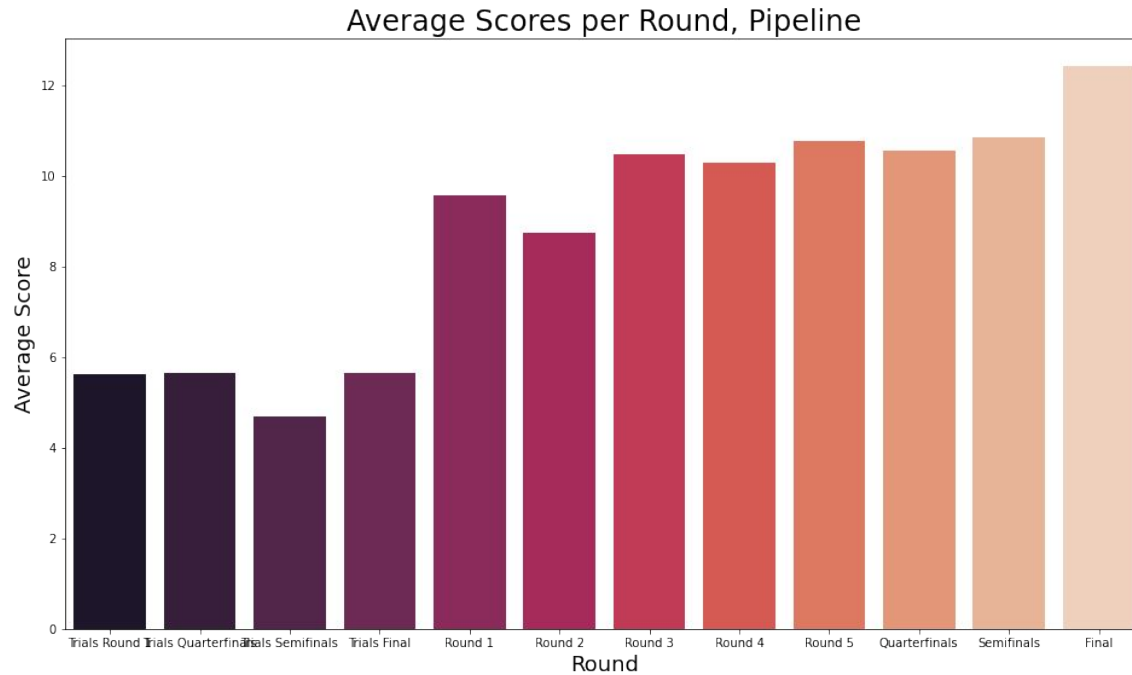
All-time average scores – Pipeline



All-time average scores – per Round

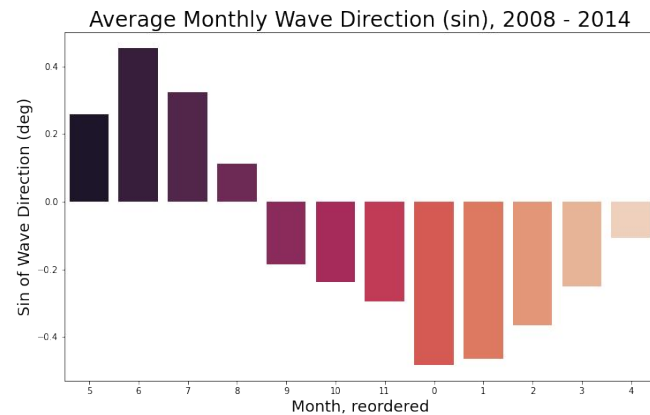
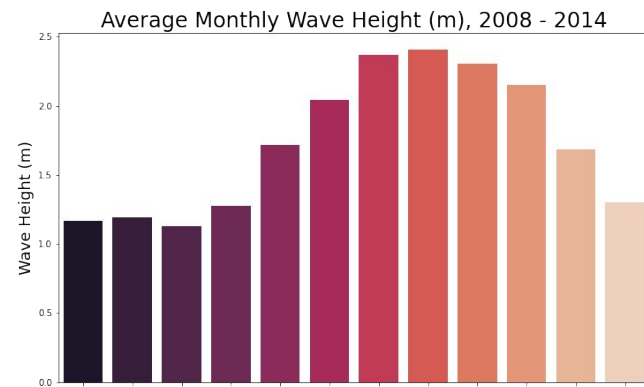


All-time average scores – per Round, Pipeline



Winter waves

Wave seasonality at Pipeline





3

Results

It's about to get *slightly*
technical

Three types of models were used...



1

Linear Regression

2

eXtreme Gradient Boosting

3

Neural Networks





**... each with
its
trade-offs...**

LinReg is
interpretable and
easy to use

1

XGBoost is less
interpretable

2

NN, difficult to
tune and data
hungry

3



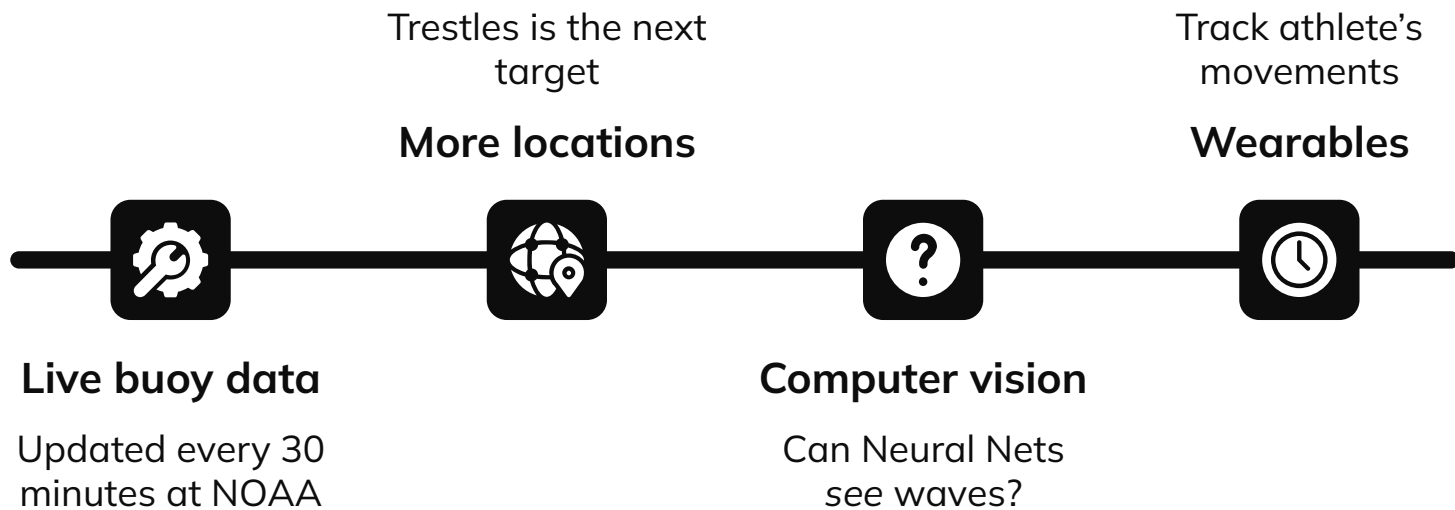


... and in the end they promised hope!

Baseline RMSE 3.167511

	RMSE train	RMSE test
LinReg (Lasso)	2.923231	2.820082
XGBoost	1.719407	2.871119
Neural Net	2.419217	2.856377

A vision of the future





Thank you!

Do you have any questions?

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