Progress Report Presentation

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Predicting arbitrary events in competitive computer team games

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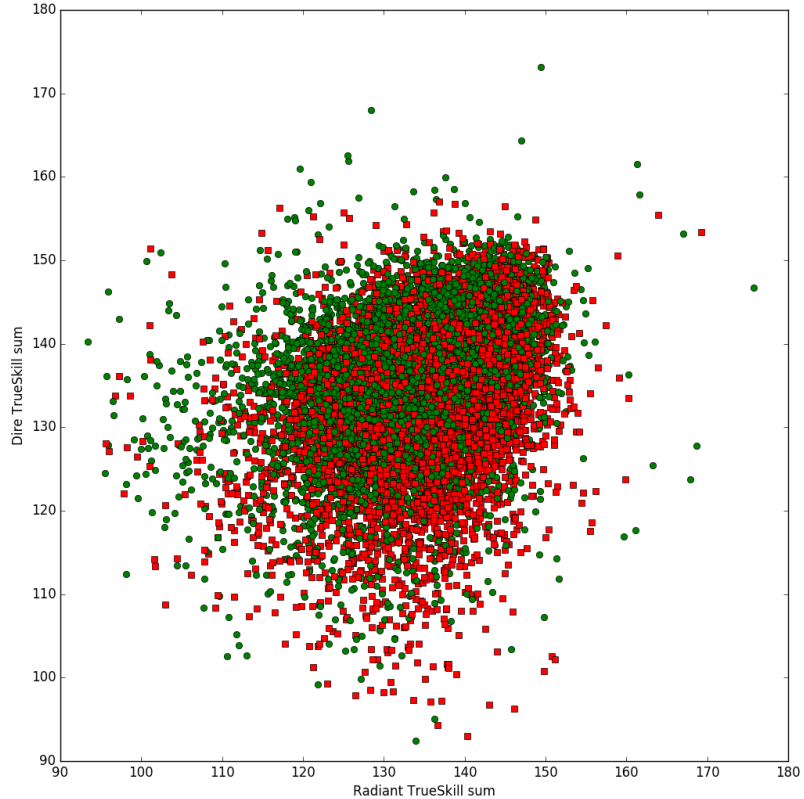
Aim

- Predict statistics about games other than winrate.
- Improve winrate prediction using associated information. Standard ranking algorithms don't perform well for games where teams change frequently.



Algorithm Outline

- Using raw data is inefficient since there is just too much of it.
- Averages and other simple aggregation techniques don't work very well.
- Need to create some representation of player's skill in different areas of the game. Use rating algorithms to approximate players skills.

1. Approximate players' skills using basic rating algorithms.
2. Train estimators using approximate skills.
3. Update approximations of players' skills using trained estimators.
4. Repeat 2 & 3 until no further change.

Training

Feature selection

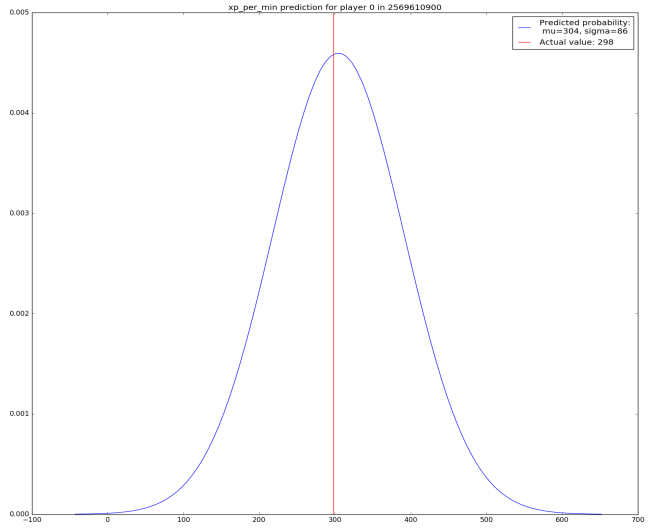
- To improve computation speed and reduce over-fitting we can select features using forward pass.
- Assume that player position is random within the team, therefore select features in groups. Each group being made up of the same skill of different players on the same team.

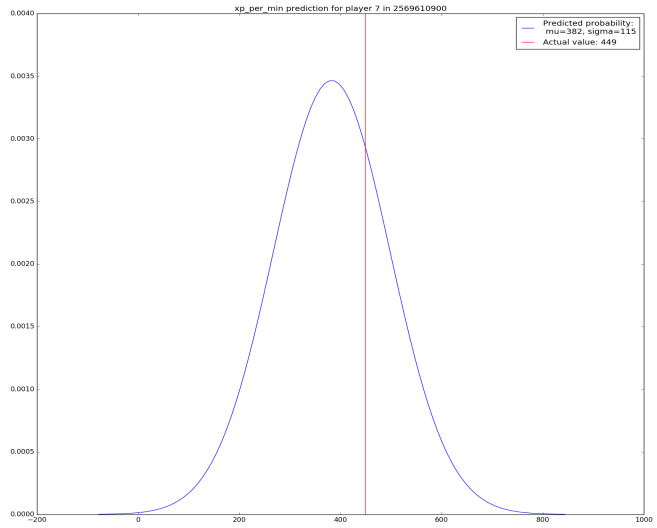
Types of estimation

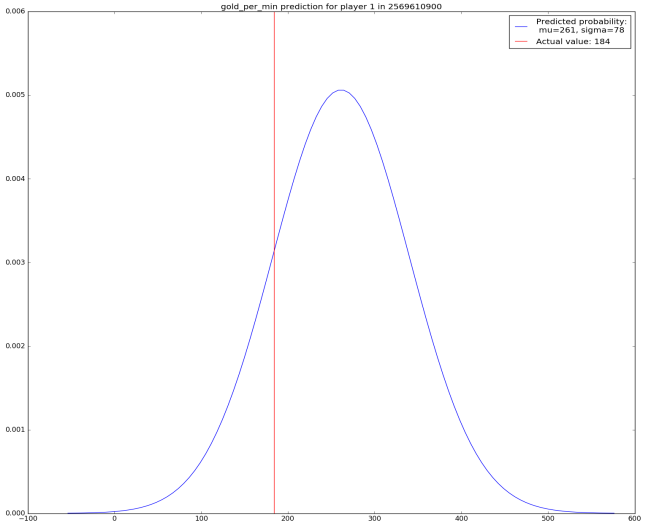
- Regression, e.g. number of enemies killed, number of passes made
- Excluding classification, e.g. win/loss
- Non-excluding classification, e.g. items acquired by a player, red cards given to players.

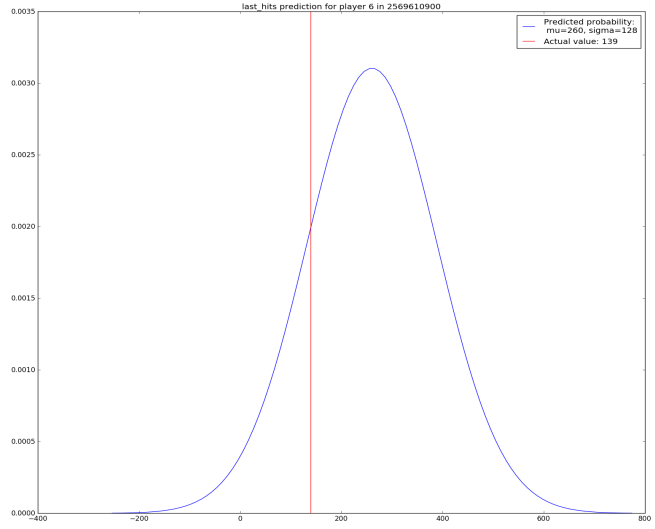
Normalise non-excluding classification to get excluding one.

Results


xp_per_min prediction for player 0 in 2569610900
Predicted probability:
mu=304, sigma=86
Actual value: 298


xp_per_min prediction for player 7 in 2569610900
Predicted probability:
mu=382, sigma=115
Actual value: 449


gold_per_min prediction for player 1 in 2569610900
Predicted probability:
mu=261, sigma=78
Actual value: 184


last_hits prediction for player 6 in 2569610900
Predicted probability:
mu=260, sigma=128
Actual value: 139