

Personal Project, Progress Report

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Project title Predicting arbitrary events in competitive computer team games

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Work Completed

- All required data has been collected and cleaned.
- Different regression and classification methods have been tried, viz. neural networks, support vector machines, gaussian processes, linear, logistic, polynomial and ridge regression as well as naive bayes and random forests.
- General outline of the algorithm finished.
- Biggest success currently was in predicting GPM and XPM variables achieving R^2 values of 0.45 and 0.35 respectively.

The project is about two or three weeks behind schedule, this can be remedied by changing the plan to following (Instead of improving accuracy in section 8, I will catch up):

7. 27 January - 9 February

Finish work on error estimation.

8. 10 - 23 February

Write code to update player skill statistic using error of predicted values, rather than using TrueSkill.

9. 24 February - 9 March

Optimising the code and correcting bugs. Learning how exactly to formally evaluate machine learning algorithms.

Deliverables: Final version of the algorithm. Script that will be used for the evaluation of the algorithm.

10. 10 - 23 March

Aggregating completed work, summarising results and preparing an outline for the dissertation. Beginning the writing of the dissertation. Evaluating the final algorithm.

Deliverables: Evaluation results for the final algorithm

11. 24 March - 6 April

Writing the dissertation.

12. 7 - 21 April

Cleaning up the dissertation, making it presentable. Making sure it's clear and checking for errors. Complete first draft of the dissertation and ask the supervisor to check it.

Deliverables: First draft of the dissertation.

13. 22 April - 4 May

Work with supervisor on correcting errors and improving the text.

Deliverables: Finalised content of the dissertation.

14. 5 - 19 May

By this time the content should be finalised and cosmetic/presentation improvement should be made. Submit the dissertation before the deadline.

Deliverables: Submission of the dissertation

Unexpected Difficulties

During the analysis part of the project, it was decided that problems which were previously identified as classification problems should actually be considered as regression problems. E.g. at the start I was trying to predict which team would win in a match, but later I realised that I should really be predicting win rate probability for each team. Unfortunately, win rate probability is not available directly in the dataset and has to be inferred. Similarly other classification problems were re-identified as regression ones.

Some of the variables could not be predicted since results are missing from a lot of points in the dataset.

I believe that there may be a problem with achieving the success criterion of the original proposal, viz. that mean squared error of predictions should be half the standard deviation in the dataset. That is the case since there appears to be not enough information in the type of data collected to predict many variables accurately.