

Project review

Team: CPS_2

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Review by: Daniel Sędlak, Kinga Brudz

1. Problem formulation. [Overall: 5/5 pts]

- a) Yes, the problem is clearly stated in the given text. The problem revolves around examining the impact of the chess opening on the outcome of a game, specifically focusing on the correlation between the chosen opening and the number of errors committed.
- b) Yes, the potential use cases outlined for analyzing the influence of different chess openings on errors during a game are well-defined and demonstrate the practical applications of the project. The use cases cover a wide range of areas.
- c) The data used for the project has been thoroughly described and is sourced from the "Lichess Chess Game Dataset" available on the Kaggle platform.
- d) Yes, a DAG has been drawn and attached to the project.
- e) Confounding factors have been thoroughly described in the project introduction.

2. Data preprocessing. [Overall: 2/2 pts]

- a) Yes, the preprocessing step is clearly described.
- b) Yes, the description provides insight into how the data was manipulated and processed to extract meaningful patterns and trends.

3. Model. [Overall: 4/4 pts]

- a) Two models were utilized in the project, and they were described in detail.
- b) The difference between the models is also well-defined, with Model 1 considering only time control and ranking difference, while Model 2 includes the choice of opening as an additional factor.
- c) Yes, the addition of the parameter representing the chosen opening in Model 2 is justified as it provides a more comprehensive analysis of how the opening choice influences the number of errors made by players.
- d) The models have been sufficiently described, providing clear information about the formulas, parameters, and required data.

4. Priors. [Overall: 3.5/4 pts]

- a) Yes - the parameters used in the models were meticulously explained and justified.
- b) The graph axes were not signed but prior predictive checks were carried out for the parameters, ensuring that the simulated parameters from the priorities were as expected.
- c) Yes, but their axes were not labeled.
- d) Yes - the choice of parameters was described in detail.

5. Posterior analysis(model 1). [Overall: 3.5/4 pts]

- a) No problem with sampling.
- b) Certainly, the samples obtained from the posterior predictive distribution have been thoroughly analyzed and examined.

- c) Yes, the data is consistent with the posterior predictive samples, and there is sufficient commentary on them.
- d) The parameter marginal distributions have been analyzed, including the examination of histograms and summary statistics. However, the description of the marginal distributions may not be sufficiently detailed to fully understand the characteristics of the parameters.

6. Posterior analysis(model 2). [Overall: 3.5/4 pts]

- a) No sampling issues.
- b) Yes - the data is found to be consistent with the samples obtained from the posterior predictive distribution.
- c) The data are consistent with the predictive samples, as presented by the project team. In particular, they mentioned that the results from a more complex model, which takes into account time control, grade difference and selected opening, are better than the results from a simpler model.
- d) The parameter marginal distributions have been analyzed, including the examination of histograms and summary statistics. However, the description of the marginal distributions may not be sufficiently detailed to fully understand the characteristics of the parameters.

7. Model comparison. [Overall: 4/4 pts]

- a) Yes.
- b) Clear conclusions and insightful comments have been drawn from the result of the Widely Applicable Information Criterion (WAIC) analysis. The findings provide valuable insights into the model's performance and allow for informed conclusions to be made based on the WAIC scores.
- c) The results obtained from the Pareto Smoothed Importance Sampling Leave-One-Out (PSIS-LOO) analysis have been thoroughly examined, leading to clear conclusions and insightful observations. These findings provide valuable insights into the model's performance, allowing for informed interpretations based on the PSIS-LOO scores.
- d) The model comparison has been discussed and the authors agree with the information criteria. They have concluded that Model 2 is better fitted to the data and more reliable based on several factors, such as lower LOO, lower standard error, higher weight, and no warning compared to Model 1.

Total grade: 25.5/27 pts ; Percentage: 94%