dissertation_writeup_trial

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1 Introduction and Objectives

1.1 background to the problem

- Importance of growth models
- Noisy environment - Systematic error
- Classification using Bayes factor - e.g. See for a dataset classified as linear which model seems to fit (frequentist) better which will be selected by BF and by how much

1.2 Reasons for the choice of project

- Application in biology and economics
- Contribution to literature as unexplored method - combination of Bayes factor and Harris paper
- Study of noise to signal ratio in classification

1.3 Identification of the project's beneficiaries

- Commercial partner (probably not)
- Literature as an empirical analysis of Bayesian classification of growth using different models

1.4 Objectives and metrics

- A Classification framework which should include : *A classification between different models* The "certainty" of classification - TBD how we can quantify this *An estimation of the parameters of the model - with the "certainty" of estimation* An identification of the systematic error

1.5 Broad methods and how they answer goal

- Curve fitting : *Fit a linear and a logistic and classify depending on the error. See how as you increase the variance of the error, the classification changes
- Bayesian approach :

  *Estimate the distribution of the parameters (we should get the "certainty" from here) of a Bayesian linear regression, sigmoid function and then add the algorithm set by Harris (his calculation was for a sigmoid. Might have to do it for a linear regression) and compare the models using Bayes factor.

  *Does the model that fits the most correspond to the correct functional form?

  *See if as you change error the systematic error is caught by the Harris algo and how the model selection varies
- Compare the two approches : how do they compare ? From there

2 Context

3 Data

4 Methods

5 Results

6 Discussion

7 Evaluation, Reflections, and Conclusions

$\sum_{i=1}^{n} X_i$