REGRESSION MODELS FOR ORDINAL DATA: A CONCISE SUMMARY

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1. Paper Summary

- The paper proposes two models for ordinal data, namely the proportional odds model and the proportional hazards model.
- The proportional odds model is a generalisation of the logistic regression model for ordinal data. Here, the odds of the response variable $Y \leq j$ are given by
$$\kappa_j = \kappa_j \exp(-\boldsymbol{\beta^T}\mathbf{x})$$
.
- The proportional hazards model considers a hazard function $\lambda(t)$, which expresses the probability of failure at time t, of the form
$$\lambda(t) = \lambda_0(t) \exp\left(-\boldsymbol{\beta^T}\mathbf{x}\right)$$
.
- The paper proposes a generalised empirical logit transform for the two models.
- The paper also discusses
  - The properties of the two models, proposing a few alternative link functions.
  - Invariances of the models under reversal of the ordering.
  - Asymptotic properties of the two models.
  - Parameter estimation for both models.
  - Application of the models to real data.

2. Parameter Estimation

Kartheek.

3. Code

Refer to `wine.ipynb`.

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