Bayesian Statistics and Modelling

Team: PizzaPizzaPizza

The relevant paper:
http://www.stat.columbia.edu/~gelman/research/published/43586_2020_1_Author.pdf
(http://www.stat.columbia.edu/~gelman/research/published/43586_2020_1_Author.pdf)

Overview of the project

- `data` - folder containing datasets
- `docs` - containing the paper, project proposal
- `reports` - explaination of the corresponding notebooks
- All other folders consist of respective codes

Timeline:

Task	Date
Using Frequentist technique for Estimating Model Parameters	Nov8-Nov11
Using Bayesian technique for Estimating Model Parameters	Nov12-Nov14
Posterior Predictive Checking	Nov15-Nov16
Calculating Bayes Factor	Nov16-Nov17
Mid Evaluation	Nov17-Nov20
Hierarchical Modelling and bayesian Regression	Nov21-Nov25
Checking our implementations on various datasets like Google Hangouts Chat and Spam Filter	Nov26-Dec3
Final Evaluation and presentation	Dec7

Work Distribution:

- We divided the work into 2 teams:
  - **Akshett and Shivang**:
    - *Model Parameters estimation*: It included Frequentist and Bayesian techniques of parameter estimation
    - *Bayesian Regression*: It included Poisson distribution regression using Bayes Technique for both fixed and mixed(random) effects
  - **Keshav and Zishan**:
    - *Model Checking*: Posterior Predictive Check and Bayes factor
    - *Hierarchical modeling*: model pooling, partial pooling and shrinkage effect, where we compared pooled vs hierarchical model

Team Member	Work
Akshett Jindal	Estimating Model Parameters (Bayesian Technique) and Bayesian Regression (Mixed/Random effects Poisson Regression)
Shivang Gupta	Estimating Model Parameters (Frequentist approach) and Bayesian Regression(Fixed effects Poisson Regression)
Keshav Bansal	Model Checking using Posterior Predictive Checking and Bayes Factor, Hierarchical modelling
Zishan Kazi	Model Checking using Posterior Predictive Checking and Bayes Factor, Hierarchical modelling