Bayesian Analysis of Data

Key Steps, following Krushcke, 2015

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December 26, 2023

Outline

Bayesian Analysis Steps

1. Identify relevant data and measurement scales.
2. Define a descriptive model for the data.
3. Specify a prior distribution on parameters.
4. Use Bayesian inference to allocate credibility.
5. Check posterior predictions against data.

Step 1: Identify Relevant Data

- Determine measurement scales.
- Identify predictor and response variables.

Step 2: Define Descriptive Model

- Choose a mathematical form for the model.
- Ensure parameters align with theoretical goals.

Step 3: Specify Prior Distribution

- Obtain audience approval for the prior.
- Ensure the prior reflects prior knowledge.

Step 4: Bayesian Inference

- Use data to update beliefs (Bayesian inference).
- Interpret the posterior distribution.

Step 5: Posterior Predictive Check

- Verify that posterior predictions match observed data.
- Consider alternative descriptive models if needed.

Conclusion

- Recap key steps in Bayesian analysis.
- Emphasize the importance of model checking.