

Nonparametric Bayesian analysis using Normalizing Flows (better funner title, please)

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May 29, 2022

1 Introduction

All explanations should be about one to two sentences only, and should primarily rely upon appropriate referencing.

1.1 Bayesian Analysis (Haining/Yichen)

- Bayesian updating, including posteriors as subsequent priors
- General arguments: full uncertainty characterization, Bayesian model averaging [Yichen]
- General criticisms: priors [Yichen]
- MCMC/MH/HMC
- VI
- Importance Sampling

1.2 Bayesian Deep Learning (Yichen/Eric/Haining)

- General criticisms
- BBB
- GP approximation with MC-dropout [Eric]
- SWAG
- criticize VAE "bayesian language" usage (to clarify what of focus is in Bayesian analysis) [Haining]

1.3 Normalizing Flows (Ryan/Yichen)

- Introduction to Generative Models [Yichen]
- Conditioners
- Transformer/Coupling functions
- Alternatives such as stochastic ODEs
- Computation
- Importance sampling under base-to-target as prior-to-posterior (e.g., SNF, Müller)

2 Method (Scott first draft)

2.1 nonparametric NF likelihood, SWAG prior, importance sampling posterior

2.2 computation: core sets, online covariance estimation, sampling

3 Examples

3.1 mean variance normal posterior

3.2 repeat SWAG analyses

3.3 regression

3.4 mixed effects models

4 Discussion