

# CPSC 532 - Homework 3

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Public GitHub repo: <https://github.com/Xiaoxuan1121/CPSC532W/tree/main/a2>

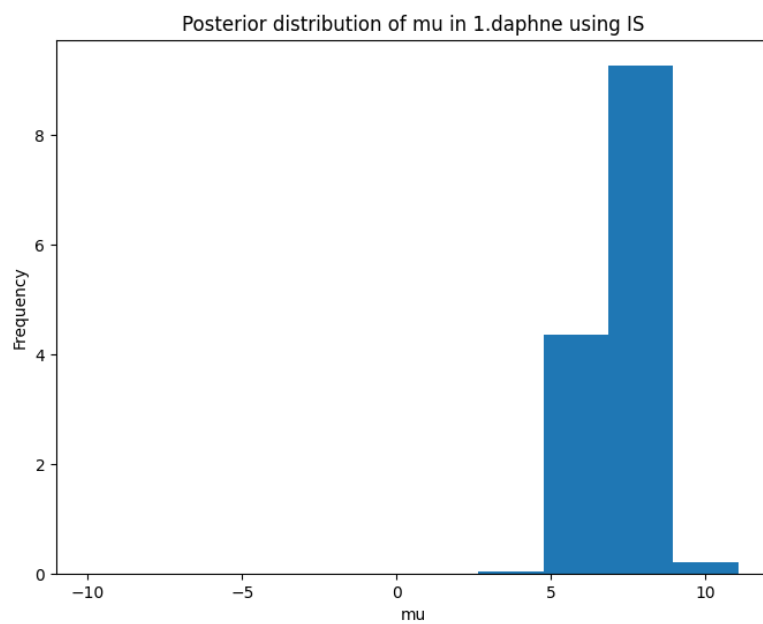
1. Program 1: the program has been run for 50000 times, and the results are:

(a) Importance Sampling:

```
Importance sampling for 1.daphne took 15.363546 seconds
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```
posterior mean of mu in 1.daphne using Importance Sampling is 7.234200954437256
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posterior variance of mu in 1.daphne using Importance Sampling is 0.7628517150878906
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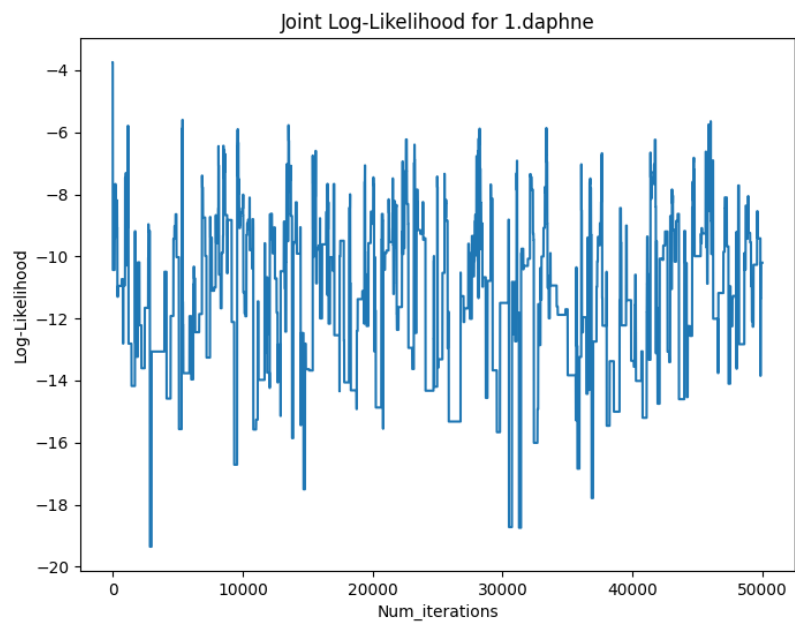
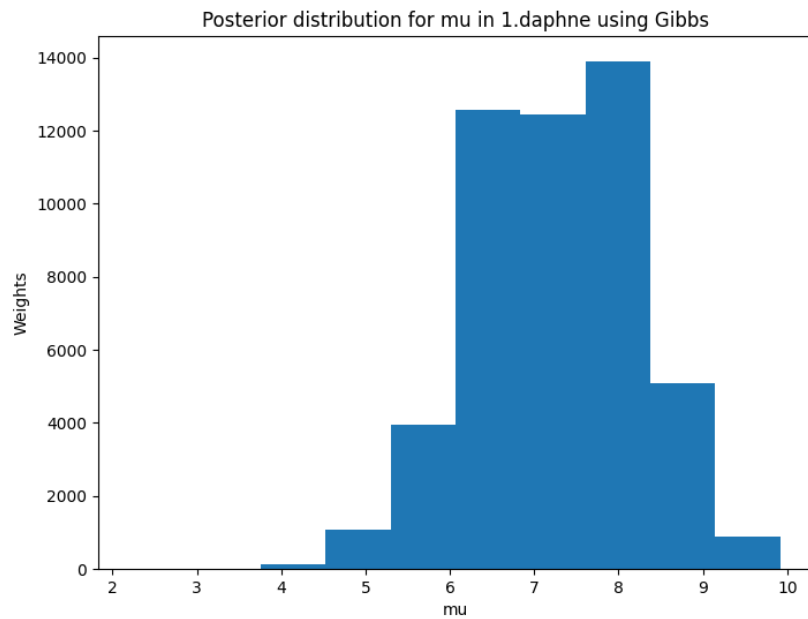


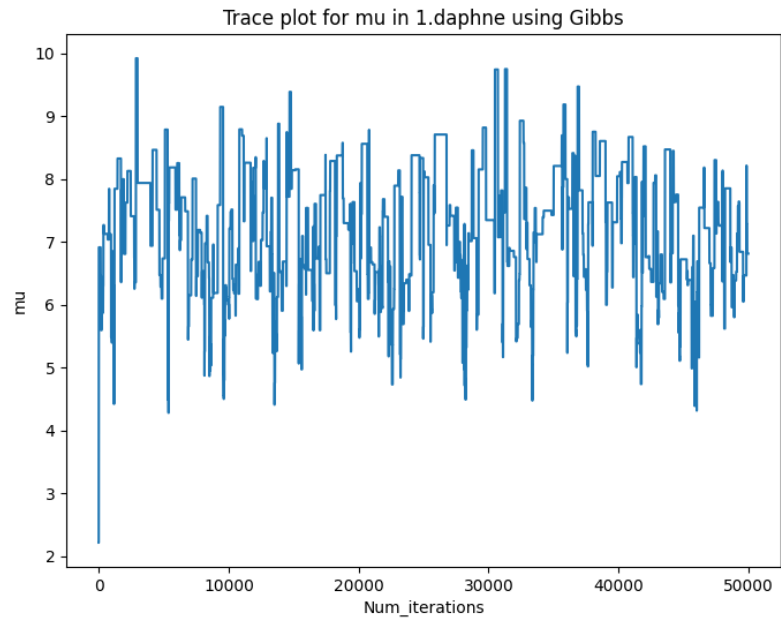
(b) MH Gibbs:

Gibbs sampling for 1.daphne took 44.513099 seconds

posterior mean of  $\mu$  in 1.daphne using Gibbs is 7.276957988739014

posterior variance of  $\mu$  in 1.daphne using Gibbs is 0.9735330939292908





(c) HMC:

Hamiltonian monte carlo for 1.daphne took 236.792089 seconds

posterior mean of mu in 1.daphne using HMC is 8.508201599121094

posterior variance of mu in 1.daphne using HMC is 0.9712223410606384