# Comparison between languages regarding to SPP

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## 1 Introduction

in this article i will write a review on performance of diffrenet programing languages that used for probabilistic programming , regarding to how they handle models with stochastic structure, expanding of the idea that introduced in https://arxiv.org/abs/2003.00704

## 2 Implementation

the code and link to github , all the implementations are linked to the repo

## 3 Results

### 3.1 Survey

| implemetation | converging | converging time | effective samples | explantory |
|---|---|---|---|---|
| Stan - Generative | no | — | — | yes |
| Stan - Marganilization | yes | TODO | TODO | no |
| WebPPL - Generative | yes | TODO | TODO | yes |
| WebPPL - Marganilization | TODO | TODO | TODO | TODO |
| Webppl - Stochastic | TODO | TODO | TODO | TODO |
| Infergo - Generative | yes | TODO-take from article | TODO-t.f.a | yes |
| Infergo - Marganilization | yes | TODO-take from article | TODO-t.f.a | no |
| Infergo - Stochastic | yes | TODO-take from article | TODO-t.f.a | yes? |

Table 1: survey model results

### 3.2 GMM

| implemetation | converging | converging time | effective samples | explantory |
|---|---|---|---|---|
| Stan - Generative | no | — | — | yes |
| Stan - Marganilization | yes | TODO | TODO | no |
| WebPPL - Generative | yes | TODO | TODO | yes |
| WebPPL - Marganilization | TODO | TODO | TODO | TODO |
| Webppl - Stochastic | TODO | TODO | TODO | TODO |
| Infergo - Generative | yes | TODO-take from article | TODO-t.f.a | yes |
| Infergo - Marganilization | yes | TODO-take from article | TODO-t.f.a | no |
| Infergo - Stochastic | yes | TODO-take from article | TODO-t.f.a | yes? |

Table 2: gmm model results

### 3.3 HMM

| implemetation | converging | converging time | effective samples | explantory |
|---|---|---|---|---|
| Stan - Generative | no | — | — | yes |
| Stan - Marganilization | yes | TODO | TODO | no |
| WebPPL - Generative | yes | TODO | TODO | yes |
| WebPPL - Marganilization | TODO | TODO | TODO | TODO |
| Webppl - Stochastic | TODO | TODO | TODO | TODO |
| Infergo - Generative | yes | TODO-take from article | TODO-t.f.a | yes |
| Infergo - Marganilization | yes | TODO-take from article | TODO-t.f.a | no |
| Infergo - Stochastic | yes | TODO-take from article | TODO-t.f.a | yes? |

Table 3: hmm model results

## 4 Summery

summery of the results , about each implementation , which way is the most efficient

## 5 Discussion

## 6 Reference


1. Stochastically Differentiable Probabilistic Programs - arXiv:2003.00704
2. Probabilistic Programming with Densities in SlicStan: Efficient, Flexible and Deterministic - arXiv:1811.00890