

CS412/CSC2506 Project Proposal

xxx,Student Number:xxxxxxx,
 xxx,Student Number:xxxxxxx,
 xxx,Student Number:xxxxxxx,

I. INTRODUCTION

For the course project, we propose to compare different Probabilistic Graphical Model *learning algorithms* in terms of their speed, performance and memory. Specifically, we plan to follow the approach described in [1].

We plan to implement and compare the following learning algorithms on the same graphical model using the same dataset:

- Iterated Conditional Modes (ICM)
- Exact EM
- Gibbs Sampling EM
- Variational EM
- Structured Variational EM
- Sum Product EM

II. DATASET

Parallel to the problem described in [1], we have generated a similar dataset where each image consists of randomly picking a background image and a foreground image and paste them together.



Fig. 1. Background images



Fig. 2. Foreground images



Fig. 3. Samples of combined images

Fig 1 shows the background images used, fig 2 shows the foreground images used, and fig 3 shows some of the generated images. Only the generated combined images are presented to our model and are used for model learning.

REFERENCES

- [1] Frey, B.J.; Jojic, Nebojsa, "A comparison of algorithms for inference and learning in probabilistic graphical models," Pattern Analysis and Machine Intelligence, IEEE Transactions on , vol.27, no.9, pp.1392,1416, Sept. 2005