Department of Computer Science

COMPUTER SCIENCE SEMINAR SERIES

Approximate Inference of Generic Likelihood via Density Preserving GMM Simplification

SPEAKER **Ms Yu Lei**

PhD Student
Department of Computer Science
City University of Hong Kong
Hong Kong

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TIME 4:00 pm - 4:30 pm
VENUE CS Seminar Room, Y6405, 6th Floor
Yellow Zone, Academic 1
City University of Hong Kong
83 Tat Chee Avenue
Kowloon Tong

ABSTRACT

We consider recursive Bayesian filtering where the posterior is represented as a Gaussian mixture model (GMM), and the likelihood function as a sum of scaled Gaussians (SSG). In each iteration of filtering, the number of components increases. We propose an algorithm for simplifying a GMM into a reduced mixture model with fewer components, which is based on maximizing a variational lower bound of the expected log-likelihood of a set of virtual samples. We also propose an efficient algorithm for approximating an arbitrary likelihood function as an SSG. Experiments on synthetic 2D GMMs, simulated belief propagation and visual tracking show that our algorithm can be widely used for approximate inference.

This paper was presented at The Advances in Approximate Bayesian Inference workshop in the Thirtieth Annual Conference on Neural Information Processing System (NIPS2016), December 05 – 10, 2016, Barcelona, Spain.

Supervisor: Dr Antoni Bert Chan
Research Interests: Probabilistic Modelling; Approximate Bayesian Inference; Computer Vision

All are welcome!

In case of questions, please contact Dr Antoni Bert Chan at Tel: 3442 6509, E-mail: abchan@cityu.edu.hk, or visit the CS Departmental Seminar Web at http://www.cs.cityu.edu.hk/news/seminars/seminars.html.