2nd year review

17th June 2011

Outline of the 2nd year review. (Underlined items have been already written or mentioned in the 1st year review.)

Suggest a general intro re localization microscopy, then work this year focusses on

* GaP + DCA, plus variational GaP implementation.

AFAIR, the main point of this was to deal better with model comparison.

* FREM. Review of Ram et al 2006 and then the blinking question.

* Results on determining optimal number of sources.

* Real data isssue as in 4.3

Then concl and future work directions.

1 Introduction

Short summary of the project, main ideas and motivation. General intro to the localisation microscopy. The main direction of the work since September 2010.

- NMF (1st year report -August 2010) + updates + connection to the Richardson - Lucy deconvolution (RLdecNotes - Sep 2010)

- (?) Time series information (Molgedey & Schuster 1994)

2 GaP + DCA, variational GaP implementation

- GaP + DCA (notes on DCA - February 2011) - Gamma-Poisson model (Canny 2004 paper) and variational approach discussion (Buntine & Jakulin 2006 paper).

- model comparison (compare with BIC...)

- Variational GaP algorithm implementation (Buntine & Jakulin).

3 FREM

- Fundamental resolution limit (Ram 2006 paper - mentioned in the Literature review - April 2010), Cramer-Rao bound & Fisher information matrix.

- Limits of the resolution for blinking sources. Is there any advantage of blinking? Does it allow better separation then the static sources?

- FREM. Review of Ram et al 2006 and then the blinking question.

4 Results

4.1 Simulations

- Determination of the number of sources - BIC, variational - likelihood lower bound, correlations in residuals

- Simulated sample with spatial structure.

- (?) Time series

4.2 Real Data

- Out of focus PSFs

- Real sample with structure & SNARE (? Colin & Rory)

5 Conclusion and future work

Direction of the future work. Experimental work. Publications (?).