

Pierre BESSIERE

**Vendredi 17 juin 2005**  
Cours Analyse Bayésienne

9h30 – 10h30 et 11h00 – 12h00

**Lundi 20 juin 2005**  
Cours Analyse Bayésienne

9h30 – 10h30 et 11h00 – 12 h00

*Bayesian models for perception, action, inference, and learning*

This short course presents the principles of Bayesian modelling.

We first introduce the theoretical mathematical background, which is very simple. We defend the view that subjectivist probabilities can be considered as an alternative and an extension of logic for rational reasoning when information is incomplete and uncertain.

We present a very simple and generic formalism call “Bayesian programming” and we use it to present possible models of some well-known cognitive questions as, for instance :

- \* Multi-modal sensory and motor fusion;
- \* Object recognition, classification of situation and novelty discovery;
- \* Taking time into account with Bayesian filtering;
- \* Navigation and map building;
- \* Attention focalization and action selection.

Some of these questions will be illustrated with robotics applications and some others with psychophysics experiments.

Finally, we present a synthetic review of the main algorithm used for Bayesian inference and learning.

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