



Séminaire conjoint avec / Joint Seminar with
La Chaire de recherche industrielle CRSNG/Hydro-Québec en optimisation stochastique de la production d'électricité
NSERC/Hydro-Québec Industrial Chair on the Stochastic Optimization of Electricity Generation

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PREDICTIVE MODELS FOR STOCHASTIC PROCESSES WITH LATENT STATE

Abstract: Hidden Markov Models (HMM) is a standard tool to represent stochastic processes with finite number of hidden states. This framework has been used in domains as varied as speech recognition systems, robotics, etc. Nevertheless, for a long time it has been a big challenge to estimate the parameters of such models from data - the classical approach is based on Expectation-Maximization algorithm, which is only locally optimal. A new framework, called Predictive State Representations (PSR), was first proposed about a decade ago as being capable to model discrete observation HMMs without the notion of hidden states. Since then, many learning algorithms have been developed to address the problem of learning PSRs from data. I will describe this framework and present the current state-of-the-art learning algorithm that has good theoretical guarantees (e.g. local optima - free) and seems to work well in practice. Further, I will describe an adaptation of this framework and its learning algorithm to stochastic processes with special structure, and show how we use it to model the inflow process at one of Hydro-Québec water reservoirs. If time permits, I will provide details on modeling and learning PSRs with continuous observation variables.

JEUDI / THURSDAY

12 décembre 2013 /
December 12th, 2013
12h-13h30

Apportez votre lunch / Bring your lunch

Salle / Room 5441
Pavillon André-Aisenstadt
Université de Montréal

Ouvert à tous / Open to all

Organisateur / Organizer
Michel Gendreau

