within the framework of
ERC FACTORY

Seminar

Thursday 5 July 2018
16h30 – 17h30
INP-ENSEEIHT, Salle F218

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ARM: Augment-REINFORCE-merge gradient for
discrete latent variable models

Abstract: To propagate the gradients through discrete stochastic layers, we encode the true gradients into zeros combined with spikes, which are distributed over a random subset of iterations and amenable to backpropagation. To modulate the frequencies, amplitudes, and signs of the spikes to capture the temporal evolution of the true gradients, we propose the augment-REINFORCE-merge (ARM) estimator, which combines data augmentation, the score-function estimator, and variance reduction for Monte Carlo integration using common random numbers. The ARM estimator provides low-variance and unbiased gradient estimates for the parameters of discrete distributions, leading to state-of-the-art performance in both auto-encoding variational Bayes and maximum likelihood inference, for discrete latent variable models with one or multiple discrete stochastic layers.