**October 15th, 2018**

**KAP 414**

**2:00 P.M. – 3:00 P.M.**

**Huyen Pham**

(Paris VII-Diderot, France)

**“**Deep Learning Algorithms for Stochastic Control on Finite Horizon**”**

**Abstract:** In this talk, I will propose some algorithms for high dimensional stochastic control problems based on deep learning and dynamic programming (DP).

Differently from the classical approximate DP approach, we first approximate the optimal policy by means of neural networks, and then the value function by Monte Carlo regression according to performance or hybrid iteration, and regress now or later/quantization method in the DP recursion.

Consistency and rate of convergence for the control and value function estimates are analyzed relying on arguments from statistical learning theory.

Numerical results on various applications from high dimensional PDE and energy storage problems illustrate the efficiency of our algorithms.

This is based on joint work with A. Bachrouf (Oslo University), C. Huré (Paris Diderot) and N. Langrené (CSIRO Melbourne).