The Hong Kong Polytechnic University
Department of Applied Mathematics

Seminar
on

The State Space Search Algorithm For Recurrent Neural Dynamics And Some Applications

by

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Abstract

We study the dynamics of the Leaky-integrator recurrent neural networks. Our results show that there exists at least one equilibrium point and the set of solutions of the dynamical system is positive invariant and attractive for the continuous-time recurrent neural network model. The globally exponential stability property of the system is provided. For the discrete-time recurrent neural network model, a state space search algorithm is proposed. By searching in the neighborhood of the target trajectory in the state space, the algorithm performs nonlinear optimization learning process and provides the best feasible solution for the nonlinear least square problems. The convergence analysis shows that the network convergence to the desired solution is guaranteed, and the stability properties are discussed. The method offers an ideal setting to carry out the recurrent neural network approach to chaotic cases of data compression and learning the short-term foreign exchange rates. It can also be applied to solve other nonlinear least square problems for global optimization problems, especially for power regression models.

Date : 30 June 2006 (Friday)

Time : 3:00 – 4:00 p.m.

Venue : Departmental Conference Room HJ610
The Hong Kong Polytechnic University

The Friday tea gathering will start right after the seminar

*** * * ALL ARE WELCOME * * ***