CIS 595-2 NEURAL COMPUTATION
Fall 2001

Time/Place: Wednesday 4:40pm-7:10pm, Tuttleman 302
Instructor: Zoran Obradovic, 303 Wachman Hall, 1-6265, email zoran@ist.temple.edu
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Office Hours: Wednesday 2:00pm-3:00pm and by appointment

Summary:
Neural networks provide powerful techniques to model and control nonlinear and complex systems. The course is designed to provide an introduction to this interdisciplinary topic. The course is structured such that students from computer science, engineering, physics, mathematics, statistics, cognitive sciences and elsewhere have an opportunity to explore promising research topics by a hands-on experience with neural network simulators applied to classification and prediction problems ranging from bio-medical sciences to finance and business.

Prerequisites:
No prior knowledge in a particular discipline is assumed as all relevant concepts will be first explained in class and then applied to design of neural networks experiments. Basic (undergraduate level) understanding of probability, statistics and linear algebra or the presmission of the instructor is sufficient.

Required text:

Recommended text:

Outline:
Some of the issues to be discussed include:

I. Supervised and Unsupervised Neural Networks
   1. Multilayer Perceptrons
   2. Radial-Basis Function Networks
   3. Committee Machines
   4. Principal Components Analysis

II. Selected Advanced Topics
   1. Self-Organizing Maps
   2. Information Theoretic Models
   3. Temporal Processing
   4. Dynamically Driven Recurrent Networks
   5. Applications

Grading:
A combination of homework and individual projects.