

CSE 779 / ECE 779 - Winter 2008

Introduction to Neural Networks

Time/Place: TR 12:30pm - 1:48, DL 266

Instructor: Prof. DeLiang Wang, 598 Dreese Lab.; Phone: 292-6827;

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Office Hours: M 2:00pm - 3:30pm and R 1:48 - 2:45pm

Grader: TBA

Course Description: A survey of fundamental methods and techniques of the field of neural networks. Single-layer and multi-layer feedforward networks; Recurrent networks; Supervised and unsupervised learning; Self-organization; Application to signal processing, pattern classification, and optimization problems.

Prerequisite: CSE 630, or ECE 600/662

Text (required): "Neural and adaptive systems," by J.C. Principe, N.R. Euliano, and W.C. Lefebvre. Wiley & Sons, 2000

Class Project: There will be two class projects. Each student is required to write programs to implement two of the neural network models studied in the class, or to explore something with prior consent of the instructor. Each student needs to turn in a report for each programming assignment, which summarizes what has been done. More detailed information will be provided in due time.

Grading Plan: Homework: 18% (3 x 6%), Midterm: 22%,
Final exam: 30%, Class project: 30% (2 x 15%)

Policy:

Homeworks and projects are due at the beginning of class (12:30PM). Late projects result in a 10% penalty each calendar day. Excuse from scheduled exams will not be accepted without substantial documentation. No late homework will be accepted without substantial documentation.

Tentative Schedule

Week	Topics:	Readings
Week 1:	Introduction and McCulloch-Pitts networks	Ch. 3
Week 2:	Perceptrons	Ch. 3
Week 3:	Data fitting and performance optimization	Ch. 1
Week 4:	Multilayer perceptrons	Ch. 3
Week 5:	Multilayer perceptrons: Continued	Ch. 3, Ch. 4
Week 6:	Midterm week: Tuesday class will be canceled	
Week 7:	Function approximation: Radial basis function networks	Ch. 5
Week 8:	Unsupervised learning	Ch. 7
Week 9:	Self-organizing networks	Ch. 7
Week 10:	Statistical pattern recognition	Ch. 2

Finals Week: **Final Exam:** 11:30 to 1:18, Thursday, March 13