CPSC 636-600 Neural Networks
Spring 2012

NEWS: *1/16/12, 01:12PM (Mon)*

- [01/16] Correction: Class meets TR 9:35am-10:50am HRBB 126.
- [01/16] Print out syllabus and slide01 and bring to class.
- [01/16] Course web page goes online.
- [LINKS] •News archive•Grades•Codes•Lecture notes

Read-Only Bulletin Board.: 1/15/08, 10:22AM (Tue)

Page last modified: 1/16/12, 01:12PM Monday.

General Information Resources Weekly Schedule Lecture Notes Example Code Read-Only Board

I. General Information

Instructor:

Dr. Yoonsuck Choe
Email: choe(a)tamu.edu
Office: HRBB 322B
Phone: 979-845-5466
Office hours: MF 2pm-3pm.

TA:

There will be no TA for this class.
Email:
Office:
Phone:
Office hours:

Prerequisite/Restrictions:

Math 304 (linear algebra) and 308 (differential equations) or approval of instructor. (Actually, if you are mildly familiar with linear algebra and have taken calculus, you should be fine.)

Prior programming experience is not a prerequisite, but there will be programming assignments.

Lectures:

TR 9:35am-10:50am HRBB 126

Synposis:

Basic concepts in neural computing; functional equivalence and convergence properties of neural network models; associative memory models; associative, competitive and adaptive resonance models of adaptation and learning; selective applications of neural networks to vision, speech, motor control and planning; neural network modeling environments.

Textbook:

The official textbook for this class will be:

- Simon Haykin, *Neural Networks and Learning Machines*, 3rd edition, Prentice Hall, Upper Saddle River, NJ, 2008. ISBN 0131471392.

However, a lot of overlapping material appear in the older edition:

- Simon Haykin, *Neural Networks: A Comprehensive Foundation*, Second edition, Prentice-Hall, Upper Saddle River, NJ, 1999. ISBN 0-13-273350-1.

so this could be a good, cheaper alternative.

Other books: see slide01.pdf.

Computer Accounts and Usage:

1. Computer accounts: if you do not have a unix account, ask for one on the CS web page.

Topics to be covered:

See the Weekly Schedule section for more details.

Grading:

1. Exams: 40% (midterm: 20%, final: 20%)
2. Assignments: 60% (5 written+programming assignments, 12% each)

Grading will be on the absolute scale. The cutoff for an `A' will be 90% of total score, 80% for a `B', 70% for a `C', 60% for a `D', and below 60% for an 'F'.

If you are absent without any prior notification to the instructor, your class participation score will be set to 0% at the very first occurrence, except for unforseen emergencies.

Academic Integrity Statement:

AGGIE HONOR CODE: An Aggie does not lie, cheat, or steal or tolerate those who do.

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

For additional information please visit: http://www.tamu.edu/aggiehonor/

Local Course Policy:

- All work should be done **individually** and **on your own** unless otherwise allowed by the instructor.
- Discussion is only allowed immediately before, during, or immediately after the class, or during the instructor's office hours.
- If you find solutions to homeworks or programming assignments on the web (or in a book, etc.), you may (or may not) use it. Please check with the instructor.

Students with Disabilities:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.

II. Resources

1. Matlab code for the examples in the text book (2nd edition): Download the ZIP archive.
2. Linear algebra review (by Eero Simoncelli)
3. Matlab primer (by Kermit Sigmon)
4. GNU Octave http://www.octave.org (compatible with Matlab)
5. My general resources page
6. 625/689 Reading List

III. Weekly Schedule and Class Notes

- **Lecture notes (in PDF format)**: all notes will be uploaded in this directory.
- It is **your responsibility** to download, print, and bring the notes to the class. Notes will be available 24 hours before each class.
- See the **2012 TAMU Calendar** for breaks, etc.
- When reading the chapters, you do not have to memorize everything.
- More detail will be available as we go along.

Week	Date	Topic	Reading	Assignments	Notices and Dues	Notes
1	1/17	Introduction	Chap 1			slide01.pdf
1	1/19	Introduction	Chap 1			slide01.pdf
2	1/24	Learning process	Chap 2			slide02.pdf
2	1/26	Learning process	Chap 2			slide02.pdf

3	1/31	Learning process	Chap 2	Homework 1 assigned		slide02.pdf
3	2/2	Single-layer perceptrons	Chap 3			slide03.pdf
4	2/7	Single-layer perceptrons	Chap 3		Homework 1 due	slide03.pdf
4	2/9	Multi-layer perceptrions	Chap 4	Homework 2 assigned (2/9)		slide04.pdf
5	2/14	Multi-layer perceptrions	Chap 4			slide04.pdf
5	2/16	Multi-layer perceptrions	Chap 4		Homework 2 due	slide04-suppl.pdf
6	2/21	Radial-basis functions	Chap 5			slide05.pdf
6	2/23	**Guest lecture**			NIH review panel	
7	2/28	Radial-basis functions	Chap 5	Homework 3 assigned		slide05.pdf
7	3/1	**Midterm exam (in class)**				
8	3/6	Special topic	Biologically inspired models			slide06.pdf
8	3/8	Special topic	Biologically inspired models			slide06.pdf
9	3/13	**Spring Break**	No class			
9	3/15	**Spring Break**	No class			
10	3/20	Special topic	Predictive models			slide.pdf
10	3/22	Committee machines	Chap 7		Homework 3 due	slide07.pdf
11	3/27	Support-vector machines	Chap 6			slide08.pdf
11	3/29	Self-organizing maps	Chap 9			slide09.pdf
12	4/3	Self-organizing maps	Chap 9	Homework 4 assigned		slide09.pdf slide09-suppl.pdf

12	4/5	Neurodynamics, Principal component analysis	Chap 14, Chap 8		slide10.pdf slide11.pdf
13	4/10	Principal component analysis/Info theory	Chap 8, 10		slide11.pdf slide12.pdf
13	4/12	Information-theoretic models	Chap 10	Homework 4 due, in class	
14	4/17	Information-theoretic models	Chap 10, ICA		
14	4/19	Information-theoretic models	Sarma and Choe (2006), Lee and Choe (2003), Sarma (2003)		slide13.pdf
15	4/24	Neural networks and autonomous semantics	Choe et al. (2007), Misra and Choe (2007)		
15	4/26	Course wrap up			

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