ECE 175B
Probabilistic Reasoning & Graphical Models

$p(x)$ ➞ [Graphical Model] ➞ $DF$

[From Bishop 2006]

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Spring Quarter 2016
Contact Information

Course Website (but mostly use Piazza)
  • Accessible from http://dsp.ucsd.edu/~kreutz

Instructor
  • Ken Kreutz-Delgado
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TA & Piazza Moderator
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Admin. Assist. (AA)
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Course Reading Packet
(available from bookstore)

Excerpted chapters from:

- *Bayesian Reasoning & Machine Learning*
  David Barber, Cambridge U. Press, 2012

- *Machine Learning: A Probabilistic Perspective*
  Kevin Murphy, MIT Press, 2012

- *Probabilistic Graphical Models*
  Daphne Koller & Nir Friedman, MIT Press, 2009

- Supplemental Texts

  - *Pattern Recognition & Machine Learning*,

  - *Artificial Intelligence: A Modern Approach 2e*,
Course Objectives

► Bayesian Probability theory: A “inference calculus” for reasoning and decision making in uncertain situations and environments.

► + Graphs: Encode & structure relationships and interdependencies.

► = Probabilistic Graphical Models (PGMs): Graphs encode probabilistic relationships & dependencies.
  • The use of Graphical Models, conditional independence and D-Separation for complexity management and knowledge encoding.

► Inference in PGMs: Efficient Bayesian decision making
Assumed Course Background

► It is assumed that students know the material from Linear Algebra and Probability well.
  • If you have taken ECE 109, ECE 174 and ECE 175A you should be well prepared for this course.

► It is assumed that students know the material from a basic course in pattern recognition well.
  • If you have taken ECE 175A you should be well prepared for this course.

► Students should know Matlab, or some other script-based programming language (Python, Maple, Mathematica …).
  • Again, ECE 174 and ECE 175A should be adequate preparation.
Course Performance Evaluation

- 30% Homework (can include computer assignments); 30% Midterm Exam; 40% Final Exam.

This breakdown is firm and non-negotiable.

- Homework (30%) is graded “A for Actual Effort”. You get full credit for turning assignments in on time, and if it is evident that you worked on all of the problems in good faith. You get partial (or zero) credit if you are missing problems or it is clear that no real good faith effort was expended in attempting to solve the problems and programming assignments. You get zero credit if you turn in nothing. Note that the assignments are not corrected.

- The Midterm (30%) and Final (40%) are rigorously graded for correctness of derivations and results.

The Final Exam is scheduled for Monday, June 6, 2016, 3-6pm. The Final date and time is firm and non-negotiable.
Student Collaboration & Cheating

Students are allowed to **discuss** homework assignments.

- *Individual homework must be turned in on time.*
- Not understanding homework solutions will hurt you on the midterm and final exams, which together comprise 70% of the overall course grade.

Exams are **closed notes and closed book**.

**Aggressive administrative action will be taken against students caught cheating.**

- Students caught cheating will be **immediately reported** to the UCSD Academic Integrity Office.