

**Books and Notes:**

1. Kevin Murphy: <https://probml.github.io/pml-book/book1.html>
2. Tom Mitchell: <https://www.cs.cmu.edu/~tom/mlbook.html>
3. Deep learning book: <https://www.deeplearningbook.org/>

**Midterm 1 Syllabus**

- Introduction.
  - Slides. intro-lec1.pdf
  - Readings. Mitchell: Chapter 1; and Murphy: Chapter 1.
- Inductive Learning.
  - Slides. ind-learn-lec1.pdf
  - Readings. Mitchell: Chapter 2.
- Decision Tree Induction.
  - Slides. dtrees.pdf
  - Readings. Mitchell: Chapter 3.
- Point Estimation; MLE and Bayesian learning.
  - Slides. Bayes-learning-lec3.pdf and mle-lec2.pdf
  - Readings. Murphy: Chapter 2 (sections 2.1—2.6), Chapter 3 (sections 3.1—3.2), Chapter 4 (sections 4.1—4.2, sections 4.5.1—4.5.2 and sections 4.6.1—4.6.4)
- Naive Bayes Readings
  - Slides. NaiveBayes-lec3.pdf
  - Readings. Mitchell: Chapter 6 (sections 6.9-6.10); and Murphy: Chapter 9 (section 9.3)
- Logistic Regression
  - Slides. LR-lec4.pdf and LRandNB-Equivalence.pdf
  - Readings. Mitchell's book chapter on logistic regression and Naïve Bayes (see the chapter on Generative and Discriminative Classifiers on the website for the book linked above); and Murphy: Chapter 10 (sections 10.1—10.2), and Chapter 9 (section 9.4)
  - Readings. For Optimization and Gradient Descent. Murphy, Chapter 8 (section 8.1—section 8.2)
- Linear Regression
  - Slides. LinearRegression.pdf
  - Readings. Murphy: Chapter 11 (sections 11.1—11.2)
- Error-Driven Linear Classifiers Readings
  - Slides. LinearClassifiers-lec5.pdf
- Neural Networks
  - Slides. Neural\_nets.pdf
  - Readings. Mitchell, Chapter 4; Deep learning book, chapters 6, 7 and 8.
- Instance Based Learning
  - Slides. nearest\_neighbors.pdf
  - Readings. Mitchell: Chapter 8.
- Bias Versus Variance Tradeoff
  - Slides. Bias-Variance.pdf
  - Murphy Book 1, Chapter 4 (section 4.7)
- Bagging and Boosting
  - Slides. Bias-Variance.pdf
  - Murphy Book 1, Chapter 18 (sections 18.2—18.5)
  - <https://hastie.su.domains/Papers/ESLII.pdf>
- Evaluating Machine Learning Algorithms
  - Slides. Eval-ML-Algorithms.pdf