Ruslan Salakhutdinov
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STA 414/2104 (Fall 2015): Statistical Methods for Machine Learning and Data Mining

Extra Office hours on Friday, Oct 23: 12 - 1pm and 2-3pm

Instructor :

- Russ Salakhutdinov, Office: Pratt Building, Room 290F
- Email: rsalakhu [at] cs [dot] toronto [dot] edu

- **Lectures**: **Mondays 2-5pm, MC 254**
- **Office hours**: Mondays 11:00am - 12:00pm in Pratt Building, Room 290F.

Marking Scheme:

- For undergraduate students
  - 3 assigments: 40%
  - 2-hour midterm 20%
  - 3-hour final exam 40%

- For graduate students
  - 3 assigments: 40%
  - 2-hour midterm 20%
  - 3-hour final exam 30%
  - 10% A 12-minute individual presentation on a conference paper that you have read.

In class nidterm is on Oct 26th
You can use a nonprogrammable calculator and an 8 by 11 inch Crib Sheet - **Single-sided** .

Final is on Thursday, Dec 17th, AM 9 - 12.

You can use a nonprogrammable calculator and an 8 by 11 inch Crib Sheet - **Double-sided** .

Course Outline:

This course covers some of the theory and methodology of statistical aspects of machine learning. The preliminary set of topics to be covered include:

- Linear methods for regression, Bayesian linear regression
- Linear models for classification
- Probabilistic Generative and Discriminative models
- Regularization methods
- Model Comparison and BIC
- Neural Networks
- Radial basis function networks
- Kernel Methods, Gaussian processes, Support Vector Machines
- Mixture models and EM algorithm
- Graphical Models and Bayesian Networks

Prerequisite: Either STA302H or CSC411H

Books :
Christopher M. Bishop (2006) Pattern Recognition and Machine Learning, Springer.

You can also use these books for additional reference:
- Machine Learning: A Probabilistic Perspective, by Kevin P. Murphy.
- Trevor Hastie, Robert Tibshirani, Jerome Friedman (2009) The Elements of Statistical Learning
- David MacKay (2003) Information Theory, Inference, and Learning Algorithms

Contact Information

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