SPRING 2018 - STAT 853 G100

APPLICATIONS OF STATISTICAL COMPUTING (4)

Class Number: 4465 *Delivery Method: In Person*

Overview

COURSE TIMES + LOCATION:

Mo, We 10:30 AM – 12:20 PM
AQ 5007, Burnaby

EXAM TIME + LOCATION:

INSTRUCTOR:

Graham, Jinko
jgraham@sfu.ca
1 778 782-3155
Office: SC-K10553

PREREQUISITES:
STAT 830 or equivalent or permission of instructor.

Description

CALENDAR DESCRIPTION:
An introduction to computational methods in applied statistics. Topics can include: the bootstrap, Markov Chain Monte Carlo, EM algorithm, as well as optimization and matrix decompositions. Statistical applications will include frequentist and Bayesian model estimation, as well as inference for complex models. The theoretical motivation and application of computational methods will be addressed.

COURSE DETAILS:
Course Outline:

We will cover topics from among the following:
- Foundations: review of Bayesian inference, finite precision arithmetic, pseudorandom number generation, computational efficiency in matrix operations.
- Low-rank approximation of data.
- Optimization: gradient and gradient-free methods/
- Monte Carlo estimation: importance sampling, Markov chain Monte Carlo, sequential Monte Carlo methods.
- Other: EM algorithm, variational Bayes approximations to posterior distributions.

Grading

Assignments	40
Participation/Attendance	20
Project	40

NOTES:
Above grading is subject to change

Materials

REQUIRED READING:

RECOMMENDED READING:

Numerical Analysis for Statisticians, 2nd ed. Author: Kenneth Lange. Publisher: Springer ISBN: 9781441959447

Monte Carlo Statistical Methods, 2nd ed. Authors: Christian Robert and George Casella. Publisher: Springer ISBN: 9780387212395

Introducing Monte Carlo Methods with R. Authors: Christian Robert and George Casella. Publisher: Springer
ISBN: 978-1-4419-1575-7

GRADUATE STUDIES NOTES:

Important dates and deadlines for graduate students are found here: http://www.sfu.ca/dean-gradstudies/current/important_dates/guidelines.html. The deadline to drop a course with a 100% refund is the end of week 2. The deadline to drop with no notation on your transcript is the end of week 3.

REGISTRAR NOTES:

SFU's Academic Integrity web site http://students.sfu.ca/academicintegrity.html is filled with information on what is meant by academic dishonesty, where you can find resources to help with your studies and the consequences of cheating. Check out the site for more information and videos that help explain the issues in plain English.

Each student is responsible for his or her conduct as it affects the University community. Academic dishonesty, in whatever form, is ultimately destructive of the values of the University. Furthermore, it is unfair and discouraging to the majority of students who pursue their studies honestly. Scholarly integrity is required of all members of the University. http://www.sfu.ca/policies/gazette/student/s10-01.html

ACADEMIC INTEGRITY: YOUR WORK, YOUR SUCCESS

MODIFIED BY:

Department, Statistics Actuarial (stat) on 2017-11-22 11:58 AM

Cancel