Advanced Business Analytics using R; BUAN 6357

Aarthi Reddy

Time: Fridays 10am - 12:45pm
Location: JSOM 1.110

Course Description

This is an Advanced Analytics course using R. You are expected to have some working knowledge of R. We begin the course with a brief and quick overview of R and its basic functions; RShiny and how to build an R package. We will also go over several supervised and unsupervised machine learning methodologies and how R and various R packages can be used to implement these methodologies. The course will also cover some natural language processing techniques as well as provide an introduction to neural networks.

Credit Hours: 3
Text: Mostly slides from class as well as any online material as stated during class

Information about Instructor

Aarthi Reddy is a Principal Data Scientist at AT&T. She has several years experience analyzing large data sets, data analysis and data exploration. She also is uniquely qualified to match machine learning or artificial intelligence algorithms with business problems. She received her B.E. in Electrical Engineering from University of Madras, M.Sc., in Electrical Engineering from

University at Buffalo and a Ph.D., in Electrical Engineering from McGill University in 2011.

Assessment

3 Mini-Projects @ 30% each.
Student presentation and class participation at 10%

Mini-Project Descripton

In each assignment you will be asked to build a shiny app (first two) or an R package (the last one) that does all of the following:

- Read datasets, and or grab datasets from the web
- Process and format data
- Analyze data - answer specific questions about datasets either through numerical/statistical analysis done in R or examining visualized datasets.
- Answer some open ended questions
- Each student will be required to present one of the three projects in class and be open to answering questions posed by instructor or other students. This gives the student some practice in describing the problem statement and explaining how the problem was solved.

Letter Grades

Top 25% Students: A
Next 15% : A-
Next 20% : B+
Remaining Students: Other Grades

Course Policies

This is an advanced class meant to prepare you for a true work environment. Here are the rules for assignments:

- Each student is expected to work independently and hand in their individual work.
- Offering and accepting solutions from others is an act of academic dishonesty, which is a serious offense and all involved parties will be penalized according to the Academic Honesty Policy. Discussion amongst students is encouraged, but no written notes may be retained from those discussions.
- You are allowed to search the internet, but may never copy any code. Your solution should be written while not looking at others' code.
- Posting homework related questions to websites such as stackoverflow is prohibited.
- No late assignments will be accepted.

Rules

- No make up exams
- No extra credit
- Late submission of assignments not allowed
- Do not pester lecturer on LinkedIn, after class chit-chat, or argue about grading or assessment
- Class participation is a must

Topics Covered

- R; RStudio; RShiny
- Social Network Analysis

- Time Series Analysis
- Probability theory; Entropy; Bayes
- Markov Model; Hidden Markov Model
- Natural Language Processing
- Neural networks

Student Objectives

- General understanding of various Business Analytics processes
- Ability to build Shiny App and R package
- Independently understand problem statement, be creative when building apps or package and clearly explain processes, advantages and disadvantages of methodologies.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same: "As a Comet, I pledge honesty, integrity, and service in all that I do."

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.