Welcome to COSC4555/5555

Chao Lan

Course Information

Time & Location: MWF 9-9:50am, EN3110

Instructor: Chao Lan (clan@uwyo.edu), EN4087

TAs: Yijun Liu (yliu20@uwyo.edu), Hui Hu (hhu1@uwyo.edu), EERB 411B

Office Hour: W 2-4:30pm (EERB), Th 1-3pm (EN).

Website: https://www.cs.uwyo.edu/~clan/teach/ml2020

What you will need for this course.

COSC3020: required for CS major undergrad; others need approval of the instructor.

Math: working knowledge on linear algebra, probability and optimization.

Python: sufficient programming skills to implement algorithms from scratch.

Latex (Overleaf): write assignments and reports.

An Example

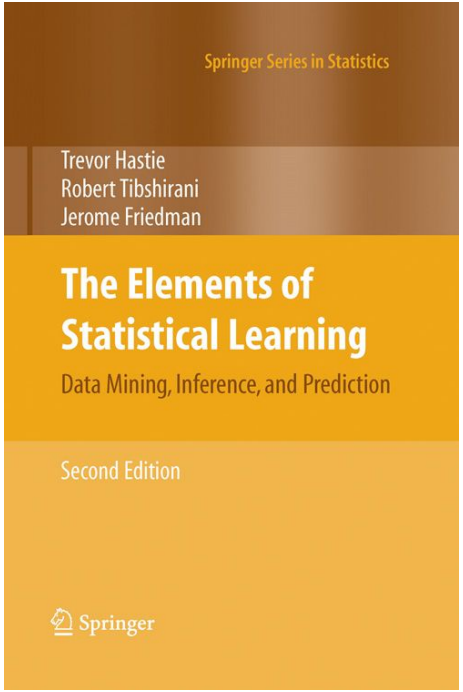
Lecture: linear regression model

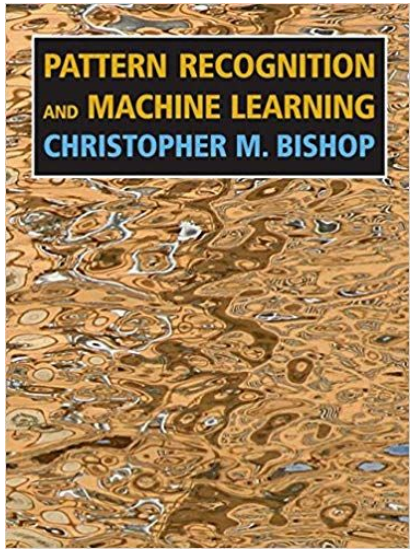
- study its mathematical model (linear algebra/probability)
- derive its optimal solution (linear algebra/optimization)
- interpret it from a density estimation view (probability/statistics)

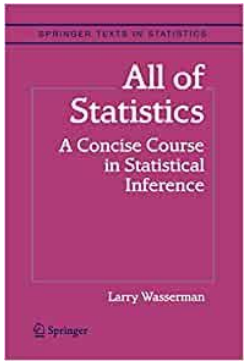
Assignment: given a variant of the linear regression model

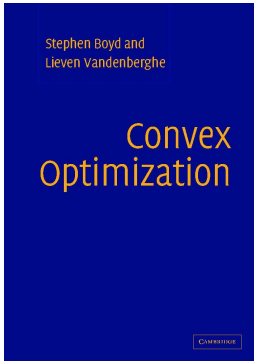
- derive its optimal solution (linear algebra/optimization)
- interpret it from a density estimation view (probability/statistics)
- implement it from scratch in Python (programming)
- evaluate it on data sets and write reports (Latex)

Reference


Springer Series in Statistics
Trevor Hastie
Robert Tibshirani
Jerome Friedman
The Elements of Statistical Learning
Data Mining, Inference, and Prediction
Second Edition
Springer


PATTERN RECOGNITION
AND MACHINE LEARNING
CHRISTOPHER M. BISHOP


All of Statistics
A Concise Course in Statistical Inference
Larry Wasserman
Springer


Stephen Boyd and
Lieven Vandenberghe
Convex Optimization

Policies

Grading

- 4550: assignment 50%, midterm 1 15%, midterm 2 15%, final 20%
- 5550: assignment 70%, midterm 1 10%, midterm 2 10%, final 10%
- quizzes (bonus)

Assignment (weekly)

- all written tasks must be done using Latex (template will be given).
- all programming tasks must be done using Python (template will be given).
- submit hard-copies of written tasks and zipped files of Python codes.
- late submissions will not be graded

Homework (due on Jan 31)

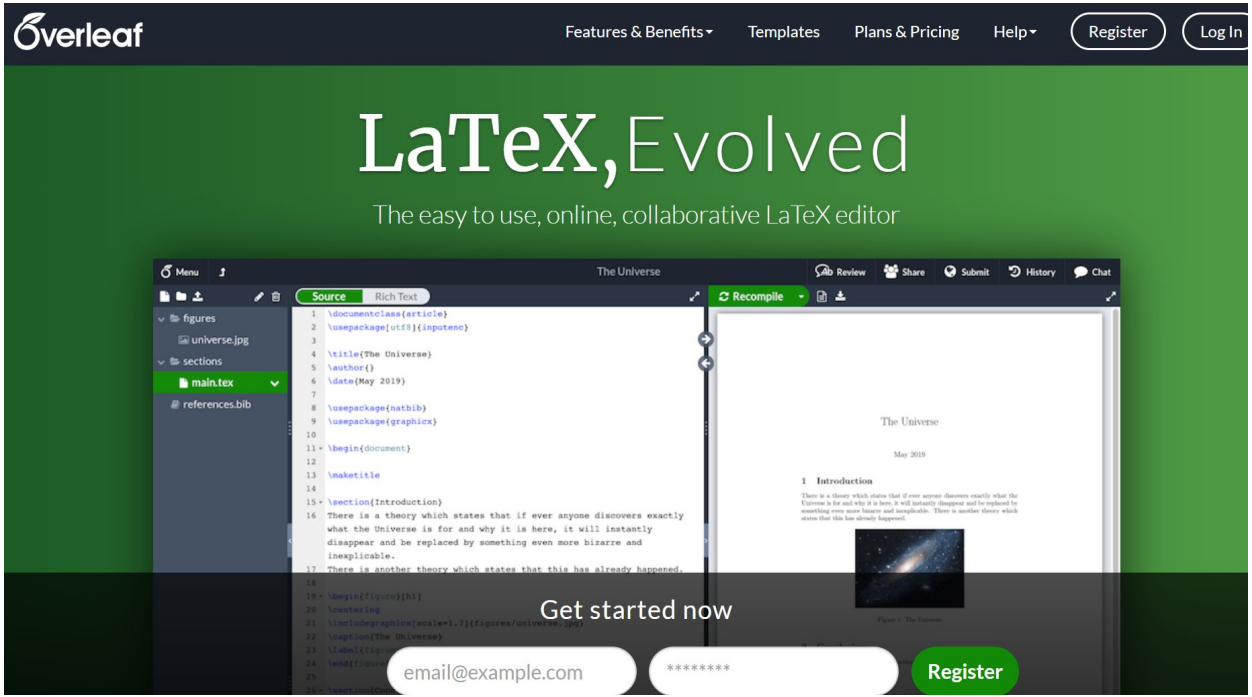
Register an account on Overleaf and complete the assigned tasks.

- https://www.overleaf.com
- templates will be given

Install Python 3.0 or above on your computer.

- https://www.anaconda.com/distribution/

Demo


Overleaf
Features & Benefits
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LaTeX, Evolved
The easy to use, online, collaborative LaTeX editor
Menu
The Universe
Review
Share
Submit
History
Chat
Source
Rich Text
Recompile
figures
universe.jpg
sections
main.tex
references.bib
\documentclass{article}
\usepackage[utf8]{inputenc}
\title{The Universe}
\author{}
\date{May 2019}
\usepackage{natbib}
\usepackage{graphicx}
\begin{document}
\maketitle
\section{Introduction}
There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable.
There is another theory which states that this has already happened.
The Universe
May 2019
1 Introduction
Get started now
email@example.com
****
Register