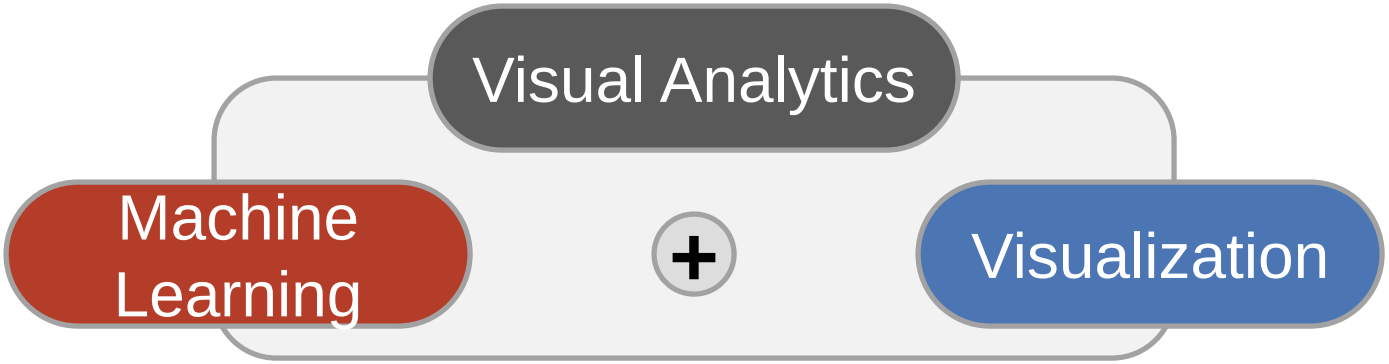
COSE111(02): Linear Algebra (전산수학)

Lecture 0. Course Overview

Instructor: Jaegul Choo (주재걸)

About Me
Google ‘Jaegul Choo’

- Assistant Professor, Computer Science dept., Korea Univ.
- B.S. (2001) in Electrical Engineering at SNU
- M.S. (2009) and Ph.D (2013) at Georgia Tech
- Main Research



- Published >60 research articles (>720 citations)
  - KDD, WWW, WSDM, AAAI, IJCAI, ICDM, TKDD, DMKD, ICWSM, SDM, TVCG (Proc. IEEE VIS), CHI, CGF (Proc. EuroVIS), VAST
  - Best Student Paper Award at ICDM’16,
  - Best Poster Award at IEEE Vis’14

Today's Lecture

- Basic Course Information
- Course Schedule
- Grading Policy

Basic Course Information

- Time and Location
  - Tuesday/Thursday 10:30-11:45pm
  - Room# 601, Woojeong Information and Communications Building (정보통신관 601)
- Instructor: Jaegul Choo (주재걸), Ph.D
  - Office: Room# 510A, Science Library Building (과학도서관 510A)
  - Phone / Email: 02-3290-4602 / jchoo@korea.ac.kr
  - Office Hours: Wednesday/Thursday 3:30-4:30pm
- Course Website:
  - We will use blackboard.

  (All the class materials including the slides and homework assignments will be available here.)

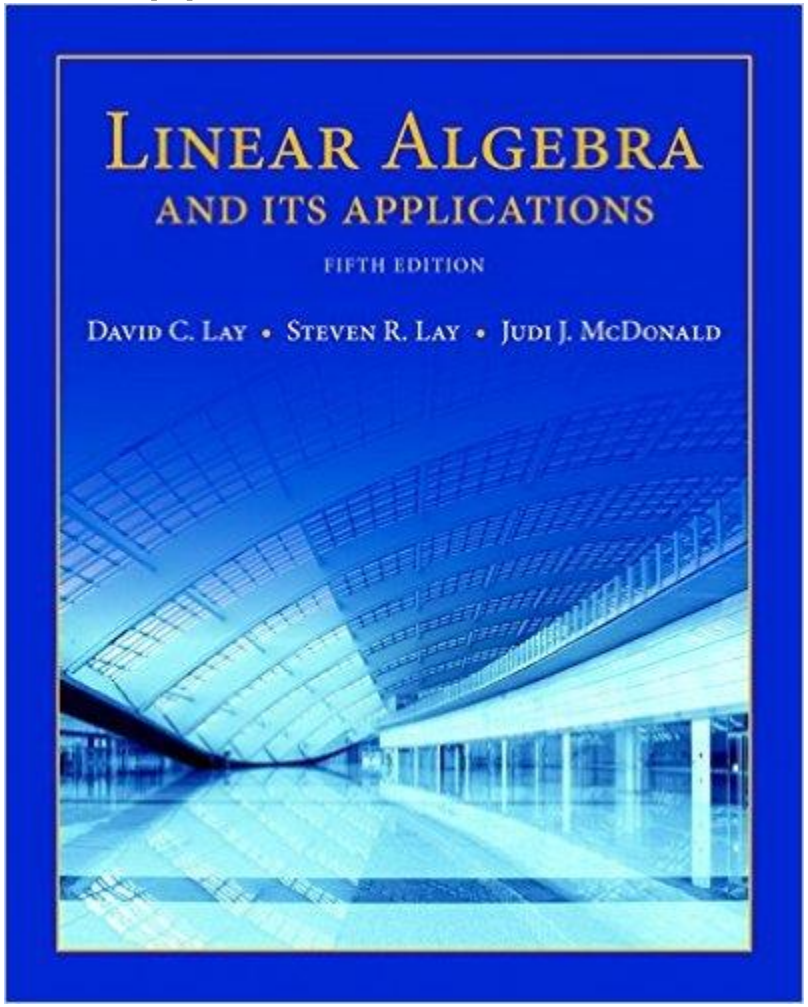
Goal of This Course

- This course is about matrix computations and linear algebra. We will focus on topics including systems of equations, vector spaces, determinants, eigenvalues, QR decomposition, and least squares.

- The goal of this course is for students to learn basic theories and techniques for matrix computations and linear algebra.

Textbook

Linear Algebra and Its Applications, 5th Edition (by David C. Lay)



Course Schedule (Tentative)

- Week 01 - Solving Systems of Linear Equations (Lay 1.1-1.2)
- Week 02 - Solving Systems of Linear Equations (Lay 1.1-1.2) (cont'd)
- Week 03 - Vectors, Matrices, and Solution Sets (Lay 1.3-1.5)
- Week 04 - Linear Independence and Linear Transformations (Lay 1.7-1.9)
- Week 05 - Matrix Operations and Matrix Inverses (Lay 2.1-2.3)
- Week 06 - LU Factorization (Lay 2.5)
- Week 07 - Subspaces, Bases, Dimension, Rank (Lay 2.8-2.9),

Course Schedule (Tentative) – cont'd

- Week 08 - Midterm
- Week 09 - Inner Products and Orthogonality (6.1-6.2)
- Week 10 - Gram Schmidt and QR (6.3-6.4)
- Week 11 - Gram Schmidt and QR (6.3-6.4) (cont'd)
- Week 12 - Least Squares (6.5)
- Week 13 - Eigenvalues and Eigenvectors (5.1-5.3)
- Week 14 - Eigenvalues and Eigenvectors (5.1-5.3)
- Week 15 – Diagonalization of Symmetric Matrices, Singular Value Decomposition (7.1, 7.4)
- Week 16 - Final Exam

Grading Policy

- 5~6 homework assignments (25%)
  - Problem sets from the textbook
    - Some may involve a little bit of programming.
  - Self study on ‘determinant’: Lectures 18 and 19 at https://ocw.mit.edu/courses/mathematics/18-06-linear-algebra-spring-2010/video-lectures/
- 1 mid-term (30%) and 1 final exam (40%)
  - 4/24 and 6/19
  - Closed-book and in-class exams
- Class participation (5%)
- Attendance: For each missed class, 0.5% point will be deducted.