SDSC 5001 Statistical Machine Learning I
Semester A 2025/26

General Information

- **Instructor:** Prof. Li ZENG
  Email: lizeng@cityu.edu.hk

- **Lecture time:** Saturday @ 14:00 – 16:50
  Office hour: Monday @ 15:00 – 16:00
  You are welcome to ask me questions during class breaks or via email.

- **Teaching mode**: face-to-face
  Lecture recordings are available only as a supplemental resource for reviewing course content after class.

  > Note: The University's teaching and learning arrangements have fully returned to a face-to-face mode starting from the 2023/24 academic year. To uphold the University's academic standards and ensure that all students receive a consistent educational experience, it is essential to strictly adhere to the face-to-face teaching arrangements. For our mainland non-local students, the recognition of their degrees by authorities such as the Chinese Service Center for Scholarly Exchange (CSCSE) is contingent upon adherence to the University's approved teaching methodologies. Any deviation from these arrangements may compromise their academic credentials and future opportunities in mainland China.

- **Teaching assistants:**
  Chengyu LIU (cliu687-c@my.cityu.edu.hk): Tutorial 1-3, Assignment 1
  Shuangxia BAI (shuangbai4-c@my.cityu.edu.hk): Tutorial 4-6, Assignment 2
  Tao HU (tao.hu@my.cityu.edu.hk): Tutorial 7-8, Assignment 3, Project coordinator

  Feel free to ask the TAs any questions. If they're unsure of the answer, they'll consult me and get back to you with the correct response.

Course materials

- **References:**
  An Introduction to Statistical Learning, 2nd edition, by James, Witten, Hastie and Tibshirani, Springer. https://www.statlearning.com/

  The Elements of Statistical Learning, 2nd edition, by Hastie, Tibshirani and Friedman, Springer. https://hastie.su.domains/ElemStatLearn/

- **Software:** Python will be used in tutorials. An introduction of Python will be provided in the second week. You may use other software (e.g., R, SAS, Matlab) for homework and project.

- **Topics to cover**

Review of Probability & Statistics
Data Exploration
Statistical Machine Learning
Linear Regression
Model Selection & Regularization
Classification
Model beyond Linearity
Tree Methods
Support Vector Machines

Homework Assignments (20% of total grade)

- There are three homework assignments which will be collected but NOT graded. A homework will be posted on Canvas and usually due in a week. You should submit your work on Canvas on time.

- A solution of each homework will be posted right after the submission deadline. If you have any questions about the solution, please contact the TA responsible for that homework.

- Late submissions within 24 hours may be accepted with a valid justification, but a penalty may apply. Submissions more than 24 hours late will NOT be accepted.

- Students unable to submit by the deadline must request an extension from the course coordinator before the deadline and provide valid supporting documents (e.g., medical certificate). Late submissions without prior approval will incur penalty or rejection.

Midterm (10% of total grade)

- The midterm exam is designed to familiarize students with the question formats and style they will encounter on the final exam.

- The exam is tentatively scheduled for the 8th week (25 October) during class time.

- Closed book. You are allowed to have a notes sheet (one A4 page, both sides). Other details will be announced once finalized.

- Make-up exams are not available for the Midterm. Students who miss the midterm will have its 10% weight transferred to the final exam. Consequently, the final exam will be worth 60% of the total grade.

Project (20% of total grade)

- There will be a group project. Detailed instructions on the project are given in a separate document.

Final Exam (50% of total grade)

- The exam will cover all course materials (lectures and tutorials).

- The exam focuses on conceptual understanding and application of statistical machine learning. At least half of the questions will be in a true-false and multiple-choice format.

- Closed book. You are allowed to have a notes sheet (one A4 page, both sides).

- There will be no makeup exam without prior permission. To seek permission, you need to submit a request on AIMS with supporting documents.

University Academic Calendar

https://www.cityu.edu.hk/arro/impd/acad_nxyr.htm