Nonparametric function estimation 354712001 Syllabus

Fall 2022

- **Instructor Information.**
  - Instructor: Huang, Tzee-Ming
  - Email: tmhuang@nccu.edu.tw
  - Office hours: Monday 8:00am - 10:00am (by appointment)
- **Textbook.** None.
- **Course Description.** Basic methods for nonparametric function estimation will be introduced and students will be asked to complete in-class assignments that involves writing R codes to implement the methods taught in class.
- **Course Objectives.** The main objective of this course is to help students develope basic understanding of concepts and methods in nonparametric function estimation.
- **Grading Policy.**
  - In-class assignments: 100%.
- **Time requirement.** The students are expected to spend 0–3 hours outside class each week on course work.
- **Additional Information.**
  - Students are required to complete assignments in class using R.
  - The topics in the class schedule on Page 2 are subject to modification. Up-to-date reading material will be posted after the class starts on the course web site at

    `http://stat.walkup.tw/teaching/np/F22/homepage.html`

Tentative Class Schedule

Week	Content
1	Introduction to nonparametric function estimation
2 – 3	Kernel regression
4 – 5	Evaluation via IMSE
6 – 7	Function approximation using basis functions
8 – 9	B-splines
10 –11	Kernel density estimation and cross-validation
12 – 13	Spline density estimation
14 – 15	Application to warping function estimation in curve alignment
16	Multivariate estimation using kernel method
17 – 18	Multivariate estimation using tensor product basis