Final Project

The objective of this project is to explore topics and research in reinforcement learning (RL) and/or functional data analysis (FDA) in greater depth than is permitted in class. The choice of the project topic is open but it should be related to the general theme of the course, i.e., RL and/or FDA. The topic may be related to your research or another class project if permitted by the instructor of your other class. *Unless substantial contents are added, the reports for the RL and FDA projects in this class CANNOT be used for the final project.*

The project should be completed by a group of 1-3 people. **Unless completed independently, a person's group mate(s) should NOT overlap any group mate(s) in any other project.**

The final project is counted 40% towards the overall grade. It has two components: a proposal presentation (10%) and a written report (30%).

1. Proposal Presentation

Each group will present the main idea of the project and preliminary results, if any. The time allowed for each presentation will be announced after the groups are determined.

- **By Nov 19 (Wednesday)**, 11:59PM EST. Each group informs the instructor by email of the topic of the project and names of the group members.
- **By Nov 21 (Friday)**, 11:59PM EST. The instructor announces the order and grading rubric for the presentations.
- **Dec 8 (Monday) and Dec 11 (Thursday).** In-class presentations.

2. Report and Submission

In the report, each group should:

- describe and specify the mathematical formulation of the problem;
- describe and apply an approach (existing or newly developed);
- analyze, interpret, and discuss the results;
- evaluate the performance of the approach according to a set of metrics, preferably against a baseline approach.

The report should be prepared following Instructions for authors for the *Journal of the American Statistical Association*, where both Word and LaTeX templates are also provided. **The report should be no more than 25 pages. It does not need to be anonymized.** *When working in groups, please clearly detail the contributions of individual group members.*

Report Submission. The following files should be **emailed to the instructor by Dec 18 (Thursday), 2025, 11:59PM, EST.**:

- Project Report (Required): a single PDF file with no more than 25 pages.
- Code File (Required): either a single file or a zip file is allowed.
- Supplementary Document (Optional): a single PDF file but it should not contain any essential components for readers to understand the project report; the project report itself should be self-contained.

Multiple submissions are allowed but only the last submission before the deadline will be graded.

The grade of the report will be based on the following criteria:

- Structure of the report

- Writing quality
- Appropriate use and evaluation of the approach
- Clarity of figures and tables
- Appropriateness of abstract and keywords
- Quality of discussion and conclusions
- Adequacy of references