Generative AI: Final Project

Department of Computer Science
National University of Computer and Emerging Sciences
Islamabad, Pakistan

Instructor: Dr. Akhtar Jamil

Due Date: December 07, 2025

Instructions

Marks Distribution: 10 (Proposal) + 45 (Code Demo) + 45 (Research Paper)

- Each student must submit the following three files packaged into a single ZIP file and named as **ROLLNO_NAME.ZIP**:

  - All code files such as Jupyter Notebooks (`.ipynb`) or Python scripts (`.py`) with the complete implementation.
  - A detailed PDF report in the form of a research paper containing all details of your implementation written in LaTeX using Overleaf, following Springer's LNCS paper format:
    Springer LNCS Template on Overleaf.
  - A plain text file (`.txt`) containing all the GPT prompts used for each question.

- Ensure that the code is well-structured with proper comments for each function. Include all necessary dependencies to ensure the code runs without errors.

- There is a **grace time of 8 hours** after the submission deadline expires. You must verify that your submissions are correct. Any submission received after this slack time will be considered late, and NO marks will be awarded.

Plagiarism Policy: Students must take full ownership of their projects and properly cite any external sources used in this project including code, research papers. Submissions with similar code or content will be considered plagiarized and awarded zero marks. If a student cannot explain the code used, it may also be treated as copied. All reports will be checked using Turnitin, and any submission exceeding 20% similarity or 30% AI-generated content will receive zero marks.

1 Project Details

1.1 Project Objectives

For the Generative AI course project, students are expected to implement multiple generative models relevant to a chosen problem, conduct detailed experiments, and present their findings in the form of a research paper. The work must include a comprehensive comparative analysis based on techniques and insights gained throughout the course.

Projects may fall into one of two categories:

- **1. Research-Oriented Projects:** These should demonstrate innovation in model design, data processing, or application. Clearly describe the novelty introduced and how it has been validated. Use multiple datasets if possible and compare your results with existing state-of-the-art methods.

- **2. Comparative Analysis Projects:** I expect most of the projects to fall into this category. These should involve implementing and evaluating several generative models on a common problem. Use appropriate evaluation metrics (beyond just accuracy), apply them across models and datasets, and critically analyze which models perform best under which conditions. Explain the mathematical foundations, experimental setup, hyperparameter tuning, and rationale behind chosen configurations.

All submitted code must be well-organized, with meaningful comments, proper class and function definitions, and a clear structure that makes the implementation self-explanatory.

1.2 Paper Requirements:

The research paper must be prepared using Springer LNCS Template format. Your report should include all the sections and subsections shown in the provided sample paper. It should clearly and technically describe each step of your project, along with a proper presentation and discussion of the results.

1.3 Prompt Requirements:

We expect substantial use of generative AI models such as ChatGPT to get help in your projects. Therefore, all students must submit a separate file containing the prompts they used, demonstrating proper prompt engineering techniques. This component will carry its own marks and will be evaluated accordingly.