DATA 266 – Generative Models
Spring 2025
Group Project Proposal
Deadline – Feb 15, 2025
Project Proposal Instructions
Page Limit – Maximum Three Pages

1. **Project Title -** Provide a descriptive and concise that reflects your project's essence.
2. **Group Members -** List group member (2 students per group). No need to create groups in Canvas.
3. **Dataset -** Identify the dataset(s) you will use. Provide a detailed description of the dataset. If necessary, you can include some samples of the dataset.
4. **Project Summary** – Clearly define the project's objective, significance, and expected impact. Outline the problem statement, proposed approach or framework, and its novelty, ensuring its relevance to the field. Keep it concise and focused while emphasizing the potential contributions of the project.
5. **Project Background** – Provide an expanded discussion of the summary, offering a structured review of existing research. Highlight key advancements and methodologies, including prompting techniques (e.g., CoT, ToT), fine-tuning methods, model alignment (RLHF, Constitutional AI), and optimization strategies (quantization, distillation). Identify gaps in current approaches and position the proposed work as an improvement over existing method. Maintain a logical flow from general to specific, use precise technical language, and review and cite a minimum of 15 credible, peer-reviewed sources. Use Google Scholar to find relevant literature.

    Approach – Specify the generative AI techniques you will implement, ensuring that your project must include A and B, along with any two methods from the C.

    A. Prompt Engineering (Minimum four different prompting strategies)
    B. Retrieval-Augmented Generation (RAG)
    C. Fine-Tuning Techniques (At least one from SFT, RLHF, or PEFT)

6. **Performance Evaluation** – Define the evaluation metrics to assess model performance, such as BLEU, FID, accuracy, or loss functions. Provide an expected baseline performance for comparison, ensuring that the evaluation framework is well-structured and measurable.
7. **Work Division & Timeline -** Clearly outline each team member's responsibilities. Include a detailed timeline with 3-5 milestones, ensuring alignment with the post-midterm progress presentations. Remember, you have to present two progress presentation. Therefore, make sure in the first presentation you present the result output of applying one of the methods (e.g., various prompting techniques) and in the second progress presentation, you must present another methods' result output.
8. **Project Categories**: A list of 7 projects is already provided. You must select any one of these.

Submission & Approval Process: Submit proposal → Receive approval or update notification → resubmit updated version of the proposal for final approval → After approval, begin project work according to the defined milestones.