**Birla Institute of Technology and Science**
**Second Semester 2024 25, CS F407 (Artificial Intelligence)**
**Assignment Statement**

Dear Students,

Please carefully read the following instructions to complete your course assignment, which carries a weightage of 25% as mentioned in the course handout.

## Steps to Complete the Assignment:

- Access the uploaded folder, which contains 5–6 research papers in each of eight different domains.
- Form a team of up to **3 students** (maximum).
- Collaborate with your team members to choose a domain of interest.
- Read the research papers within your chosen domain critically. Question every aspect of the papers, including methodologies, datasets, and conclusions.

1. **Define a Problem Statement**
    - After analyzing the papers, identify a problem statement. You will notice that most papers utilize a dataset and train a machine learning (ML) model, evaluating its performance using domain-specific metrics.
    - Your **primary task** is to:
        - Choose **two or more ML models** to work with.
        - Define the domain-specific metrics you will use to assess the trained models.
        - Perform a comparative study of the selected ML models.
        - Answer the question:
          *"For the domain you have chosen, which ML model is the best (among the ones you selected) for predicting future outcomes, and why? Prove your conclusion with evidence."* Remember, you do not have to create some kind of software, but learn how to choose a best ML model for solving some problem.
2. **Refine the Problem Statement**
    - Clearly specify:
        - The ML models you will analyze.
        - The dataset(s) you will use for training and testing.
        - The metrics you will use for comparison.
        - The type of experiments you will conduct to justify your conclusion.
3. **Prepare and Submit an Initial Report**
    - Structure your report as follows:
      a. **Title**: Title of your project.
      b. **Domain**: The domain you have chosen.
      c. **Abstract**: Briefly explain why you selected the domain and summarize the research papers you studied.
      d. **Research Papers Summary**: Provide a concise summary of the key findings

from the papers you analyzed.
e. **Problem Statement**: Clearly state the finalized problem statement and your approach.
- **Submission Deadline**: Submit the report by **February 20, 2025**.

4. **First Viva and Feedback**
   - Prepare a 10-minute presentation of your report.
   - During the viva, your problem statement will be reviewed, and, if required, we will refine/modify/change it.
5. **Implementation**
   - After the first viva, begin coding to implement and solve your finalized problem statement. Python is recommended for this task.
6. **Final Submission and Viva**
   - Submit your final code and a detailed report summarizing your findings and conclusions.
   - A final viva will be conducted to evaluate your work.

Please adhere to the instructions and deadlines. This assignment provides an opportunity to apply your knowledge to real-world problems and enhance your understanding of machine learning.

Best of luck!