



# Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2025-26

<b>Class:</b>	<b>BE-AI&amp;DS</b>	<b>Semester:</b>	<b>VII</b>
<b>Course Code:</b>	<b>CSDOL7011</b>	<b>Course Name:</b>	<b>NLP Lab</b>

<b>Name of Student:</b>	BARI ANKIT VINOD
<b>Roll No. :</b>	61
<b>Experiment No.:</b>	1
<b>Title of the Experiment:</b>	Identifying and Critically Reviewing Research Papers on a Selected NLP Application
<b>Date of Performance:</b>	
<b>Date of Submission:</b>	

## Evaluation

<b>Performance Indicator</b>	<b>Max. Marks</b>	<b>Marks Obtained</b>
Performance	5	
Understanding	5	
Journal work and timely submission	10	
Total	20	

<b>Performance Indicator</b>	<b>Exceed Expectations (EE)</b>	<b>Meet Expectations (ME)</b>	<b>Below Expectations (BE)</b>
Performance	4-5	2-3	1
Understanding	4-5	2-3	1
Journal work and timely submission	8-10	5-8	1-4

## Checked by

**Name of Faculty :**

**Signature :**

**Date :**



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**Aim:** To perform a critical literature review of five research papers on a chosen NLP application, focusing on the problem addressed, solution proposed, and limitations identified in each work.

**Objective:** To critically review five research papers on an NLP application, analyzing problems, solutions, and limitations.

### Tools Required:

1. Research databases: Google Scholar, IEEE Xplore, ACM Digital Library, Springer, Elsevier, or arXiv
2. MS Word / Google Docs or LaTeX for documentation
3. Internet access

### Procedure:

1. Select a Real-World NLP Application:
  - a. Choose any one topic such as:
    - i. Machine Translation
    - ii. Sentiment Analysis
    - iii. Text Summarization
    - iv. Question Answering Systems
    - v. Chatbots
    - vi. Named Entity Recognition
    - vii. Information Retrieval, etc.
2. Search and Select 5 Research Papers:
  - a. Preferably from peer-reviewed journals or conferences.
  - b. Papers must be recent (preferably from the last 5–7 years).
  - c. Ensure papers are directly relevant to the chosen application.
3. Read and Analyze Each Paper:
  - a. Focus on these three aspects for each paper:
    - i. Problem Statement: What problem or challenge does the paper address?



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- ii. Proposed Solution: What model, algorithm, or framework is presented?
- iii. Critical Evaluation: What are the limitations, gaps, or areas for improvement?
4. Prepare the Review Document:
  - a. Create a structured table or section for each paper with:
    - i. Title, Authors, Year, and Source
    - ii. Summary of problem
    - iii. Summary of solution
    - iv. Critical remarks and insights
5. Submit the Review:
  - a. The write-up should be minimum 4–5 pages.
  - b. Include references in standard citation format (APA/IEEE/MLA).

### Description of the Experiment:

This experiment introduces students to academic research and the process of reviewing scientific literature in the field of NLP. It allows them to explore cutting-edge developments, analyze technical approaches, and reflect critically on current limitations. This lays the foundation for their final-year projects or research internships.

### Detailed Description of the NLP Technique:

Since this experiment is open-ended, the NLP techniques will vary based on the papers selected. However, students will encounter:

- Deep learning architectures (e.g., LSTM, BERT, GPT, T5)
- Statistical NLP approaches (e.g., N-gram models, HMMs)
- Evaluation metrics (e.g., BLEU, ROUGE, Accuracy, F1-score)
- Datasets commonly used for training and evaluation

### Conclusion:

Through this experiment, I learned how various deep learning architectures and statistical NLP approaches contribute to natural language understanding and generation. Models like LSTM, BERT, GPT, and T5 showcase the evolution from sequence-based learning to transformer-based contextual understanding, enabling better handling of long-term dependencies and semantic meaning in text.

Traditional methods such as N-gram models and Hidden Markov Models (HMMs) provide a strong

statistical foundation for language modeling, though they are limited by data sparsity and lack of contextual awareness compared to modern deep learning models.

I also explored evaluation metrics such as BLEU, ROUGE, Accuracy, and F1-score, which help assess model performance in different NLP tasks like translation, summarization, and classification. Understanding these metrics is essential to measure the effectiveness and quality of generated outputs.

Additionally, I became familiar with commonly used NLP datasets such as IMDB, SQuAD, GLUE, and Wikipedia corpora, which are crucial for model training and benchmarking.

Overall, this experiment enhanced my understanding of how NLP systems are built, trained, and evaluated, and how advancements in deep learning have significantly improved the field of human language processing.

CSDOL7011: Natural Language Processing Lab

