ASSIGNMENT – 2

Statistical Machine Translation with BLEU Evaluation

PART–1

Task A: SMT System with Automatic Evaluation (8 Marks)
Objective:
Develop an SMT application that translates text and evaluates translation quality using BLEU score.

User Interface (4 Marks)
- Input source text
- Upload or choose a reference translation
- Display:
    - SMT output
    - BLEU score
    - N-gram precision table (1-gram, 2-gram, etc.)

Translation & Evaluation (4 Marks)
- Implement:
    - SMT translation using Moses or similar
    - BLEU score computation
    - Brevity penalty and modified n-gram precision
- Allow evaluation of multiple candidate translations.

Task B: Quality Improvement Strategy (2 Marks)
Explain:
- How BLEU can be increased using:
    - More training data
    - Better language models
    - Domain-specific parallel corpora

PART–2

Literature Survey (5 Marks)

Conduct a literature survey on the following topic to gain insights into the current state of research.

Topic:

Automatic Evaluation Metrics for Statistical Machine Translation

Deliverables:

PART - 1

1. A well-documented code (Python, SMT toolkits, and frontend) for the Statistical Machine Translation application.
2. Instructions for running the application locally.
3. A brief report explaining the design choices, any challenges faced during implementation, and how the SMT model was integrated and used.
4. A set of screenshots that explains the entire flow (with results/output) of the application to be included in the report.
5. Task-B to be submitted as a .pdf document.

PART – 2

A well-documented literature review to be presented as a .pdf document.