Project Initialization and Planning Phase

Date	26 November 2024
Team ID	SWTID1726490119
Project Title	Toxic Comment Classification for Social Media
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

Project Overview	
Objective	Develop a deep learning model to automatically classify toxic comments on social media, aiming to improve content moderation and foster healthier online interactions.
Scope	The project will focus on detecting toxic text-based comments in English using labeled datasets. Various deep learning techniques, including ANNs, CNNs, and transformers (e.g., BERT), will be explored to optimize performance. It excludes non-text forms like images or videos.
Problem Statement	
Description	Manual moderation of toxic comments on social media is inefficient and error-prone. An automated system is needed to accurately and quickly identify harmful comments.
Impact	A successful solution will reduce online harassment, promote safer user interactions, and lower the burden on human moderators.
Proposed Solution	
Approach	➢ Preprocess and tokenize text data. ➢ Use embeddings (e.g., GloVe, BERT) for text representation. ➢ Train and evaluate deep learning models (CNN, LSTM, BiLSTM).

	➢ Compare model performance using metrics like accuracy and F1 score.
Key Features	➢ Use of advanced models like BiLSTM for context-aware classification. ➢ Comparative analysis of different architectures. ➢ Potential for real-time integration in moderation systems.

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications	2 x NVIDIA V100 GPUs or similar for model training.
Memory	RAM specifications	16 GB or higher
Storage	Disk space for data, models, and logs	1 TB SSD for dataset storage, models, and logs.
Software		
Frameworks	Python frameworks	TensorFlow or PyTorch, Flask (for potential web integration).
Libraries	Additional libraries	TensorFlow, PyTorch, Keras, Hugging Face Transformers, NLTK, SpaCy.
Development Environment	IDE, version control	Google Colab for experimentation, and Git for version control.
Data		
Data	Source, size, format	Kaggle Jigsaw Toxic Comment Classification dataset