1. **Title: Cyberbullying Detection on Social Networks Using Hybrid RNN-LSTM Model**
2. **Project Statement**

The proposed model leverages the sequential nature of textual data prevalent in social media conversations. RNNs are employed to capture the contextual dependencies within short-term sequences, while LSTMs excel at capturing long-term dependencies, enabling the detection of nuanced and evolving cyberbullying patterns. The hybrid architecture not only enhances the model's ability to understand the temporal dynamics of online interactions but also mitigates the vanishing gradient problem often encountered in traditional RNNs.

Outcomes:

Enhance Accuracy and Efficiency: Develop a deep learning model, specifically incorporating Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), to improve the accuracy and efficiency of cyberbullying detection. By leveraging the spatial and temporal features of textual data, the model aims to discern subtle patterns indicative of cyberbullying behaviours.

Training and Optimization: Implement a rigorous training process for the deep learning model, involving fine-tuning and hyperparameter optimization, to ensure optimal performance. The model should be adept at distinguishing between normal and cyberbullying instances, with an emphasis on robustness in real-world scenarios.

Comparative Analysis: Conduct a comprehensive comparative analysis with existing cyberbullying detection methods, highlighting the superiority of the proposed deep learning model in terms of accuracy, scalability, and adaptability to evolving online behaviours.

3. **Modules to be Implemented**

1. Data Collection and Pre-processing
2. Dataset Annotation
3. Hybrid Deep Learning Model Architecture
4. Training and Optimization
5. Comparative Analysis

Milestone 1: Weeks 1-3

Module 1: Data Collection and Pre-processing

Objective: Gather data from social networks containing diverse instances of cyberbullying. Pre-process the data to clean and format it for training the deep learning model.

Tasks:

Web scraping or API integration for data collection.

Text cleaning, normalization, and tokenization.

Dataset splitting into training and testing sets.

Milestone 2: Weeks 4-6

Module 2: Dataset Annotation

Objective: Annotate the collected dataset to provide ground truth labels for the deep learning model's training and evaluation.

Tasks:

Manual annotation or crowdsourcing to label instances of cyberbullying.

Ensuring diversity and representation across different cyberbullying forms.

Out[3]:

	tweet_text	cyberbullying_type
0	In other words #katandandre, your food was cra...	not_cyberbullying
1	Why is #aussietv so white? #MKR #theblock #ImA...	not_cyberbullying
2	@XochitlSuckkks a classy whore? Or more red ve...	not_cyberbullying
3	@Jason_Gio meh. :P thanks for the heads up, b...	not_cyberbullying
4	@RudhoeEnglish This is an ISIS account pretend...	not_cyberbullying
...	...	...
47687	Black ppl aren't expected to do anything, depe...	ethnicity
47688	Turner did not withhold his disappointment. Tu...	ethnicity
47689	I swear to God. This dumb nigger bitch. I have...	ethnicity
47690	Yea fuck you RT @therealexel: IF YOURE A NIGGE...	ethnicity
47691	Bro. U gotta chill RT @CHILLShrammy: Dog FUCK ...	ethnicity

47692 rows × 2 columns

Milestone 3: Weeks 7-8

Module 3: Hybrid Deep Learning Model Architecture

Objective: Develop a hybrid model using both Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs) for effective cyberbullying detection.

Tasks:

Architecture design, specifying layers and connections.

Integration of CNNs for spatial analysis and RNNs for temporal understanding.

Model optimization and hyperparameter tuning.

Milestone 4: Weeks 9-10

Module 4: Training and Optimization

Objective: Train the deep learning model on the annotated dataset, optimizing its parameters for improved accuracy and efficiency.

Tasks:

Training the model on labelled data.

Fine-tuning model parameters for optimal performance.

Evaluating performance on validation sets.

Module 5: Comparative Analysis

Objective: Conduct a comparative analysis against existing cyberbullying detection methods to showcase the advantages of the proposed model.

Tasks:

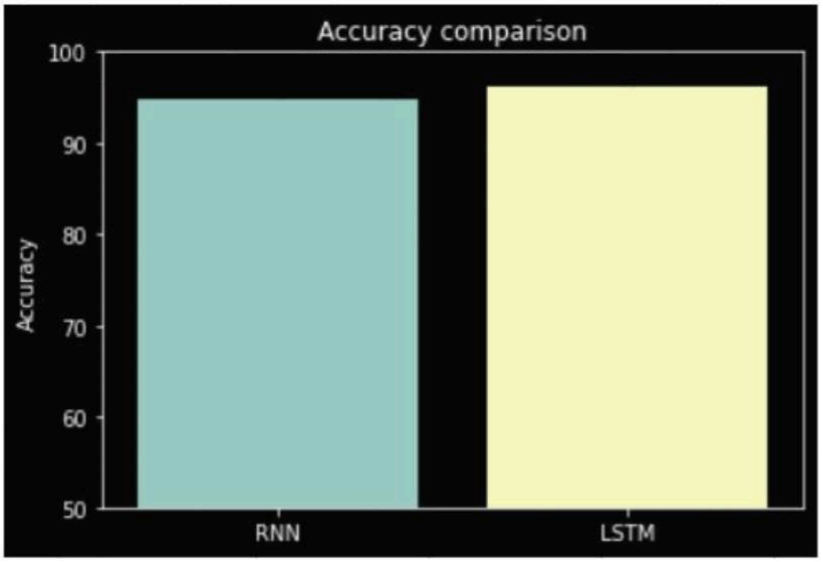
Evaluate the model against benchmark datasets.

Compare performance metrics with other detection methods.

Generate comparative analysis reports.

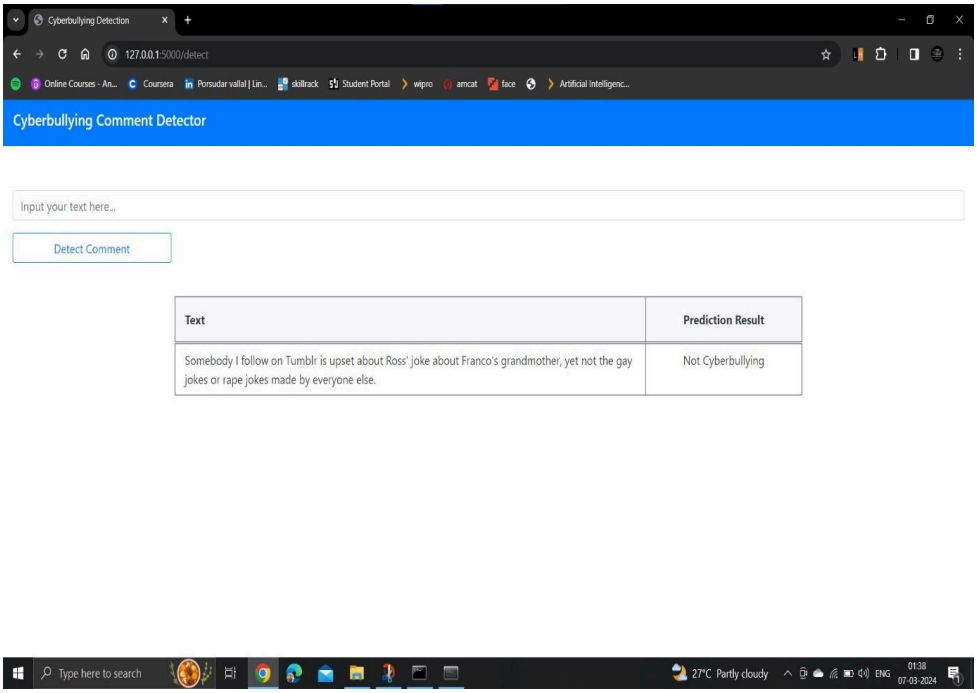
Out[29]:

	Agorithms	accuracy
0	RNN	94.71
1	LSTM	96.26



Output Screenshots:

1. Detection Results with result negative



2. Detection Results with result possitive