Problem statements

NLP BASED REPORT SUMMARISATION

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Objective:

- Develop an **NLP-powered AI model** that **automatically summarizes** long traffic enforcement and accident reports into **concise, structured summaries** for quick decision-making.
- Helps **officers and policymakers** get key insights **without reading full reports**.

Used an accident dataset with details like date, time, location, type, and casualties.

Used ChatGPT to generate large structured summaries for better analysis.

Data preprocessing

- **Cleaning:** Steps taken to clean the text data.
  - Lowercasing
  - Removing punctuation
  - Tokenization
  - Removing stopwords

LSTM is a type of Recurrent Neural Network (RNN) designed to handle sequential data. It is particularly effective for tasks involving sequences, such as text, time series, or any data where the order of elements is important. LSTMs are capable of learning long-term dependencies, making them suitable for tasks like text summarization, translation, and prediction.

Steps in Using LSTM for Your Data

Data Preparation

- **Cleaning**:
- **Tokenization**: The cleaned text is tokenized into sequences of words or characters. This is necessary because neural networks operate on numerical data,
- **Padding**: The sequences are padded to ensure they are of uniform length.

Model Training

- **Architecture**: The LSTM model consists of several layers:
  - **Embedding Layer**: Converts the tokenized text into dense vectors of fixed size.
  - **LSTM Layers**:
  - **Dense Layer**: The final layer that outputs the summary.
  - **Training**:

localhost:8503

Deploy

Accident Data Extractor

Enter cleaned text:

On 15 Dec 2019 at 08:00 PM, an accident occurred in THIRUVANANTHAPURAM CITY under the
jurisdiction of Nemom police station. The accident type was Grevious Injury. There were 0 fatalities,
1 grievous injuries, and 0 minor injuries. The accident took place at THANIPADAM in a Rural. Weather
conditions were Sunny/Clear, with Good visibility. The road type was Other Road with features such

Generate Summary

Generated Summary:

Generated summary from LSTM model

Extracted Information:

District: THIRUVANANTHAPURAM CITY

Date Report: 15 Dec 2019

Date Accident: 15 Dec 2019

Time Accident: 08:00 PM

Death: 0

Grievous: 1

Minor: 0

Place of Occurance: at

THANKYOU!