**Project Overview: Sentiment Analysis**

* **Title: Sentiment Analysis**
* **Subtitle: Decoding Emotions: Sentiment Analysis of Text Data Using NLP and Machine Learning**
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* **Date: 15-8-2025**

**Objective**

I develop a sentiment analysis model capable of classifying text data (e.g., User\_reviews) into categories such as **positive**, **negative**, or **neutral**. The goal was to extract emotional tone and insights from user experience improvements.

**Key Components**

* **Data Collection**  
  I used a dataset of labeled text entries from public sources User\_review containing examples of various sentiments.
* **Text Preprocessing**
  + Tokenization
  + Stopword removal
  + Lemmatization/Stemming
  + Vectorization using TF-IDF or word embeddings (e.g., Word2Vec or BERT)
* **Model Selection**  
  we experimented with several algorithms:
  + Decision Tree Classifier
  + Logistic Regression
  + Tfidf Vectorizer (Text)
  + Label Encoder
* **Training & Evaluation**
  + Split data into training and test sets
  + Used metrics like accuracy, precision, recall, and F1-score
  + Applied cross-validation to ensure robustness

**Output & Insights**

* Each input text was classified into one of the sentiment categories.
* We visualized sentiment distribution using bar charts or pie charts.
* Highlighted keywords or phrases that influenced sentiment classification.
* Provided actionable insights based on sentiment trends like User feedback patterns.