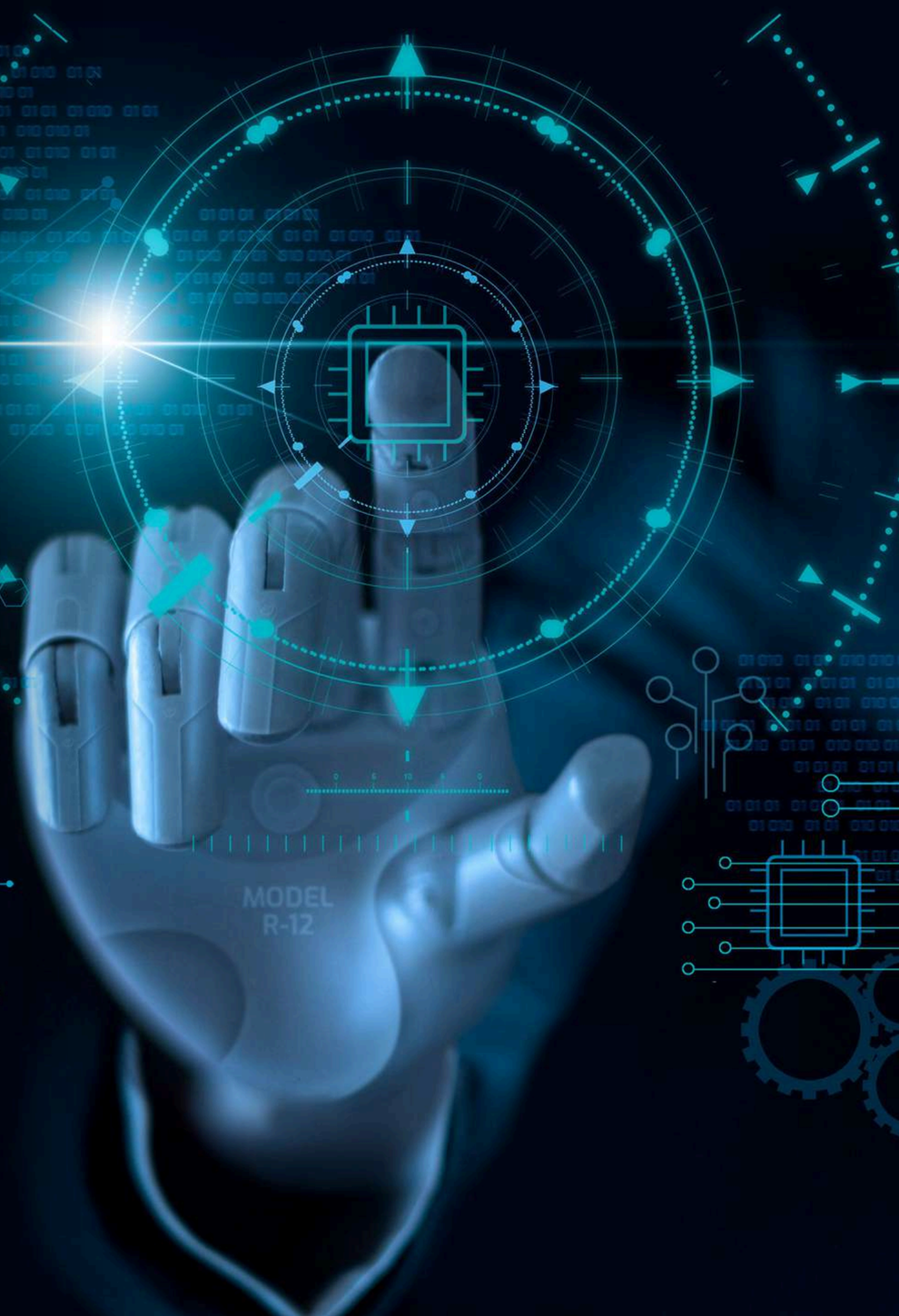
Deep Learning

News Headline Generator using GRU- based Encoder - Decoder

Trends Shaping the Future of Innovation.

Presented By **Team Akatsuki**



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Introduction

Welcome to the Future

01 Automatic headline generation = Summarizing news articles into concise, informative titles.

02 Uses Natural Language Processing (NLP) and Deep Learning.

03 Replaces manual effort with AI-driven summarization.

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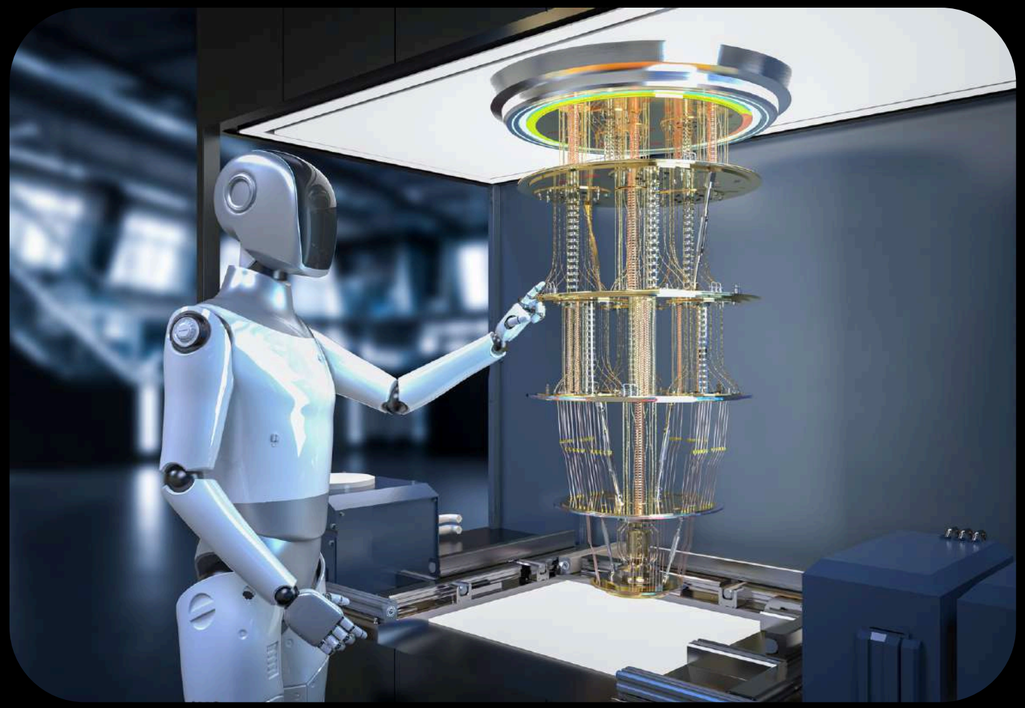

Problem Statement

Creativity Unleashed

- News articles are lengthy; users want quick insights.
- Manual headline writing is subjective, slow, and inconsistent.

Goal: Build a model that auto-generates high-quality headlines from raw news text.

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Project Objective

Implement and compare encoder-decoder architectures: LSTM/GRU, LSTM with Attention, and Transformer with Self-Attention.

- **Structure:** News text + Corresponding Headline.

- **Preprocessing:**
  1. Lowercasing Punctuation removal
  2. Stopword removal (if applied) Tokenization

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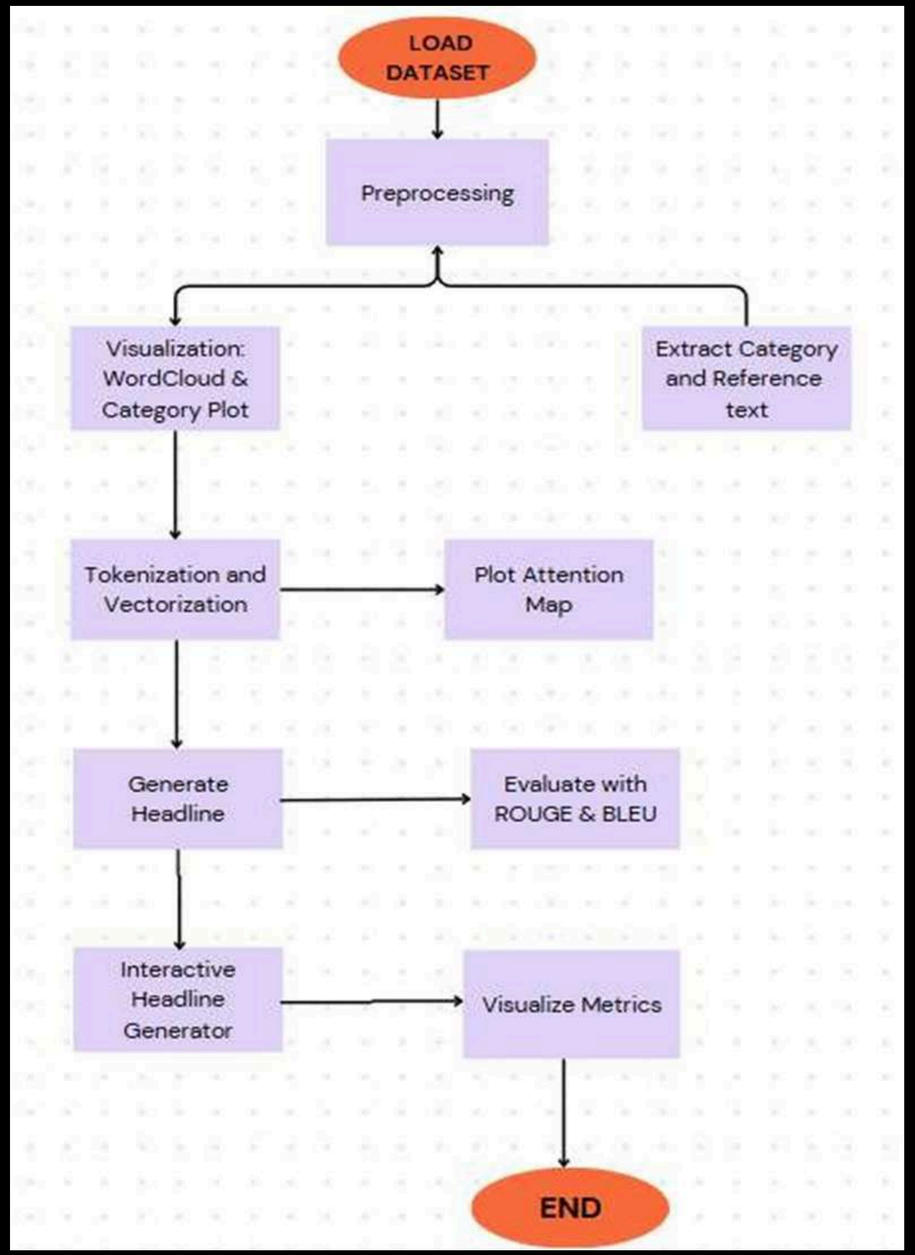
Model Architecture Diagram



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Preprocessing Pipeline

- Importing and cleaning the dataset.
- Splitting data into training and test sets. Tokenizing input text and headlines.
- Padding sequences for equal input length.

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Evaluation Metrics

- ROUGE(Recall-Oriented Understudy for Gisting Evaluation) Score – Compares overlap between generated and true headlines.
- BLEU(Bilingual Evaluation Understudy) Score – Measures n-gram overlap.
- Qualitative Evaluation: Human-readable relevance

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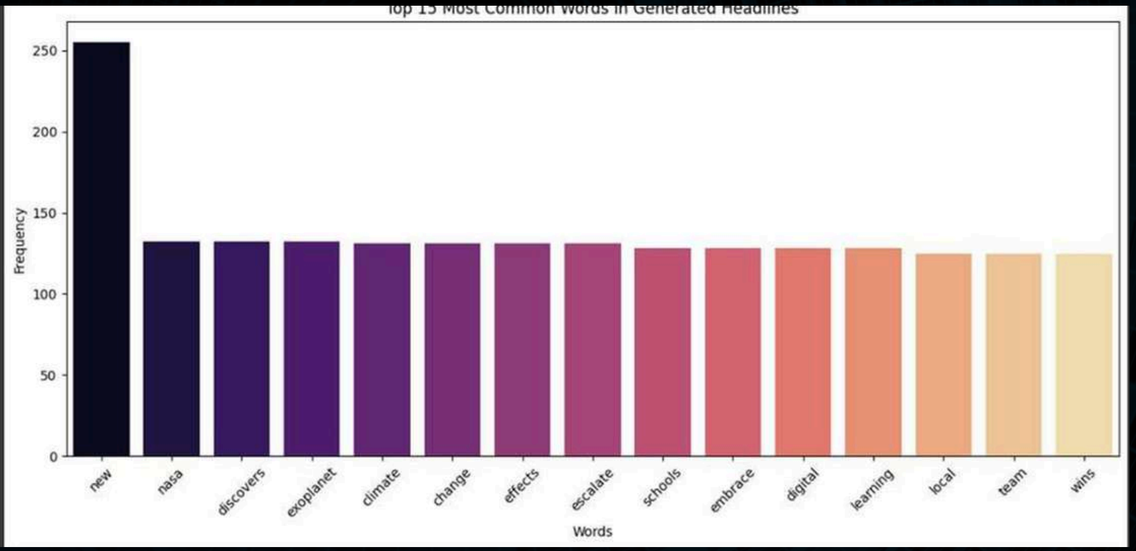
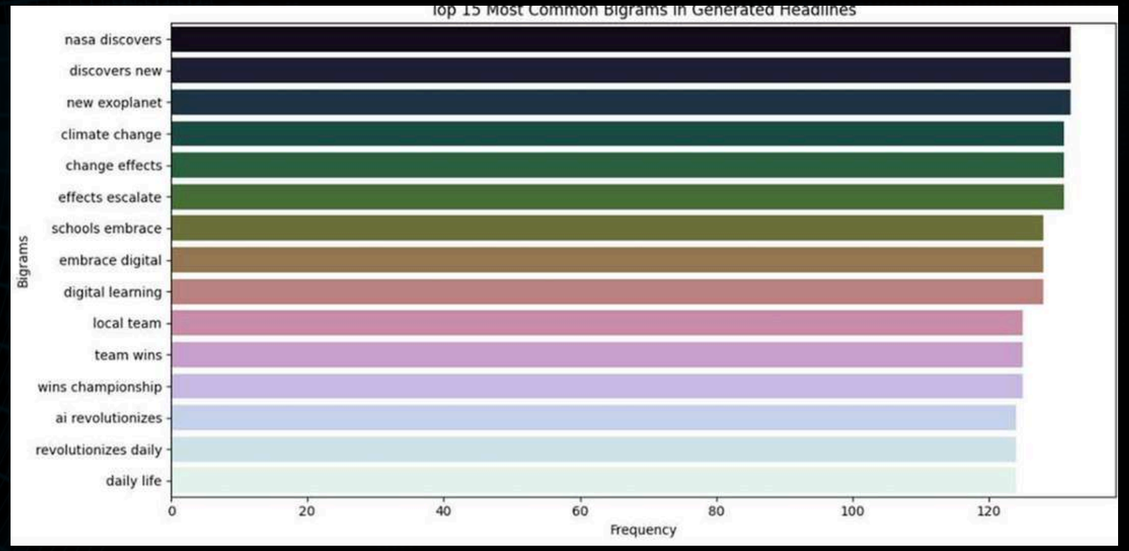
15 Most Common words or diagrams





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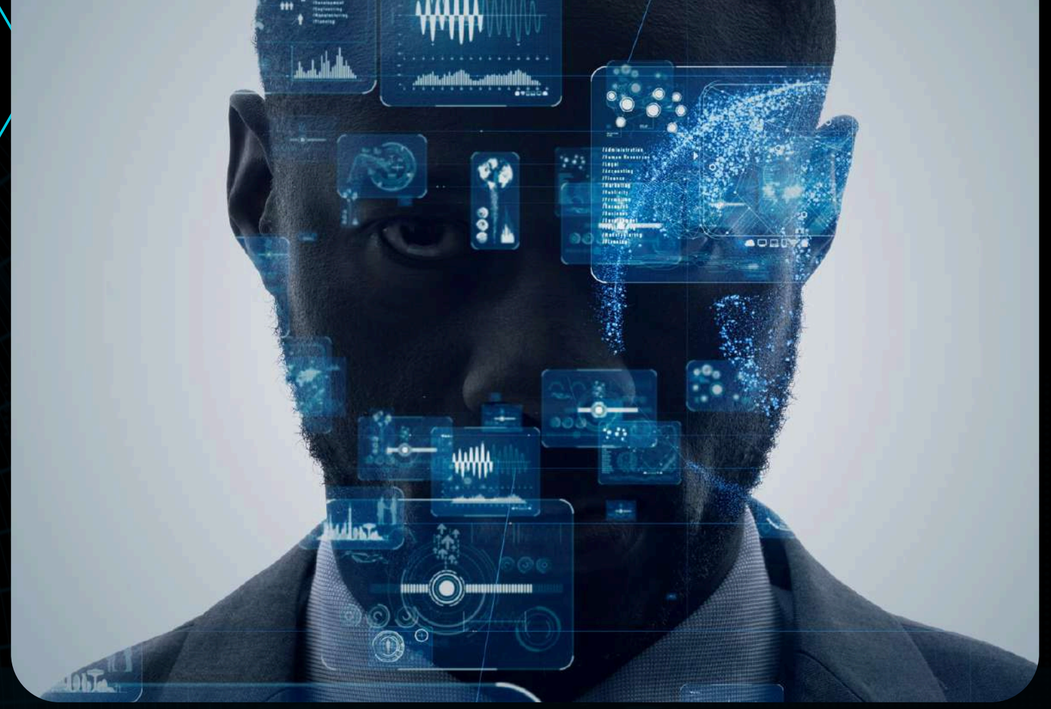
Conclusion

Shaping Tomorrow Together

- Developed a GRU-based Encoder-Decoder model.
- Generated concise headlines from full news articles.
- Open scope for improvements using advanced techniques.



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References

GRU :-

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LSTM:-

- https://www.geeksforgeeks.org/understanding-of-lstm-networks/

Bahdanau:-

- https://machinelearningmastery.com/the-bahdanau-attention- mechanism/

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Thank You

Presented By **Team Akatsuki**