



News Headline Generator using GRU- based Encoder - Decoder

Trends Shaping the Future of
Innovation.

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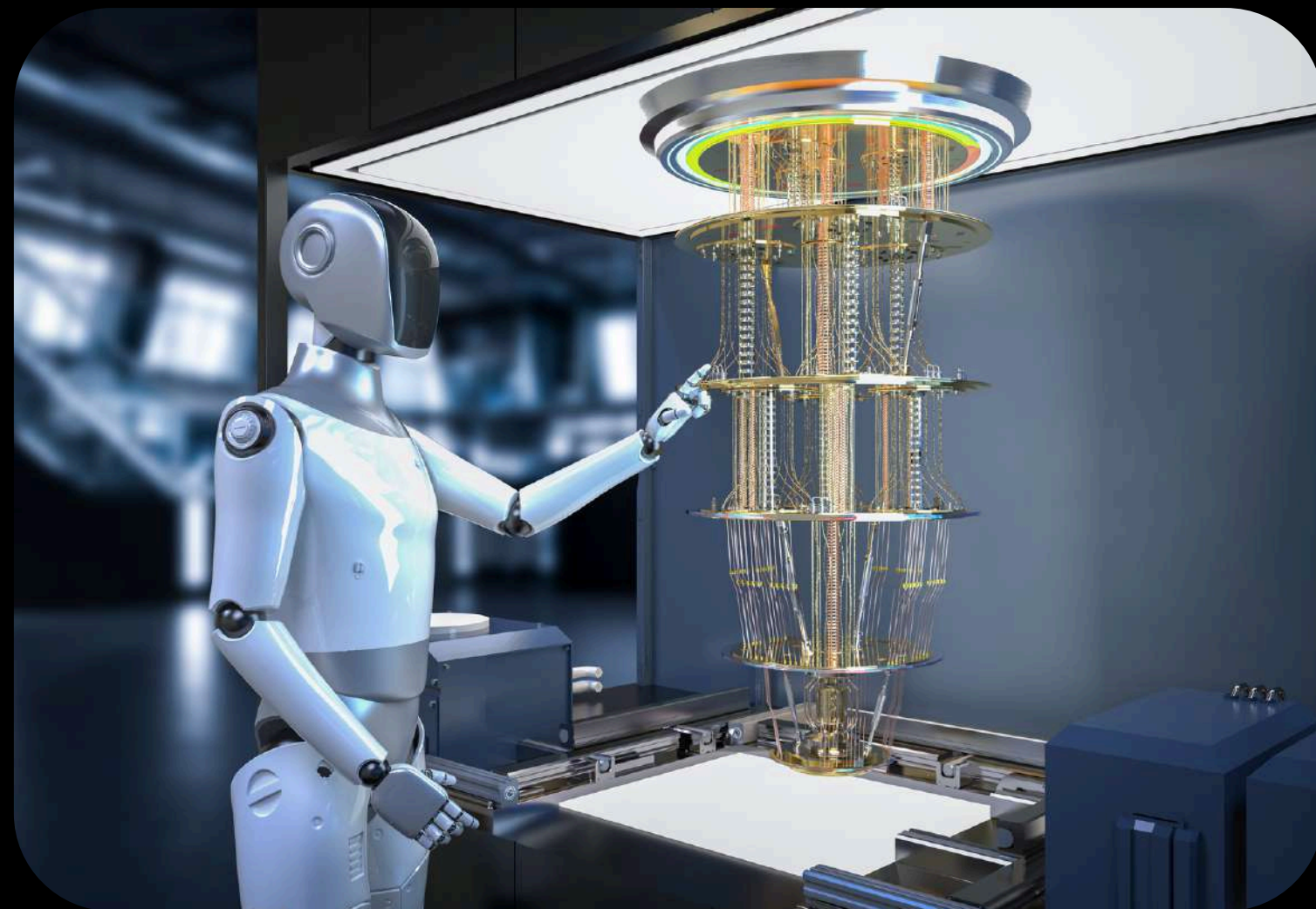
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Introduction

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.





Problem Statement

Creativity Unleashed

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

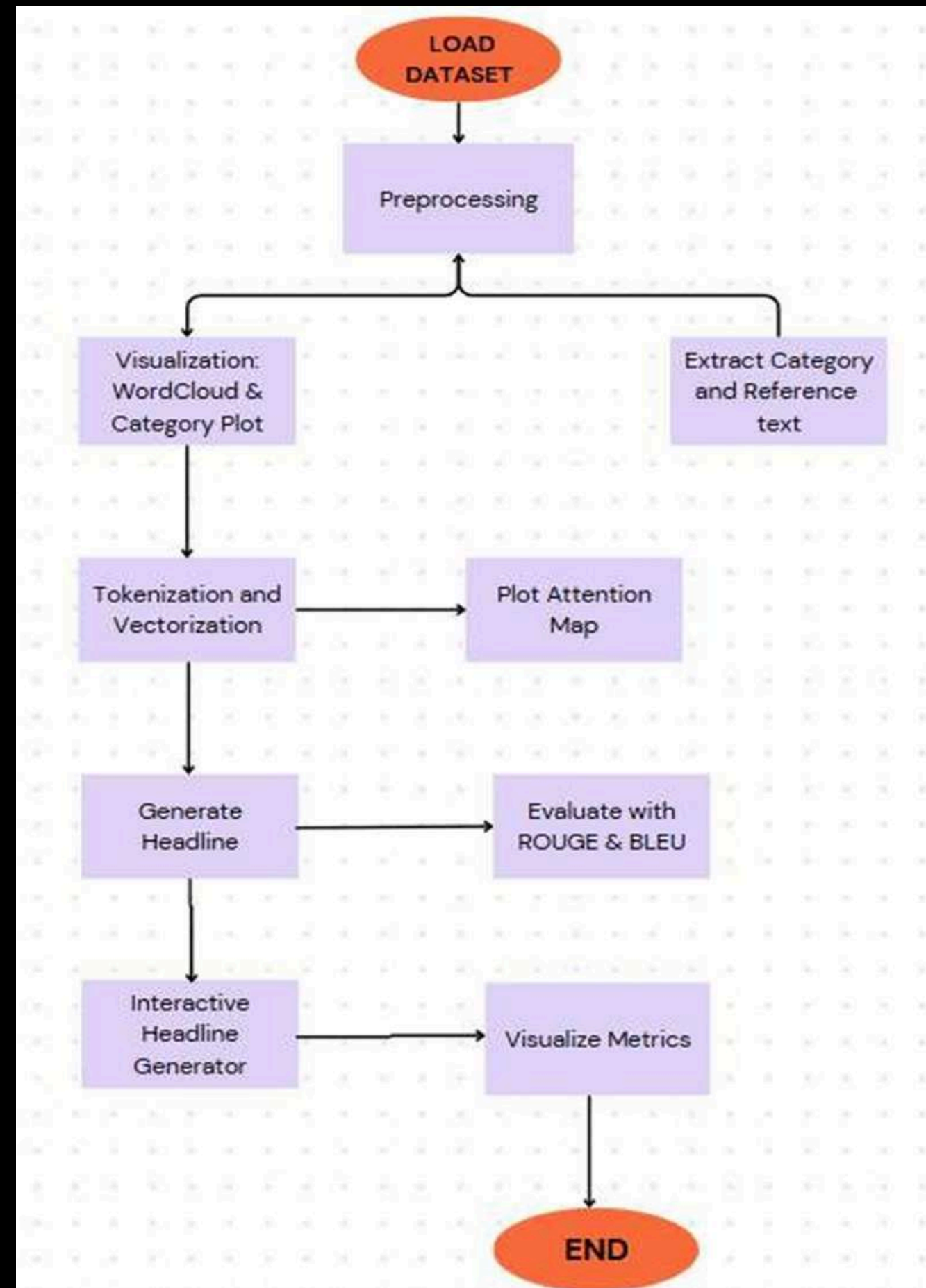
Goal: Build a model that auto-generates high-quality headlines from raw news text.

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

Model Architecture Diagram





Preprocessing Pipeline

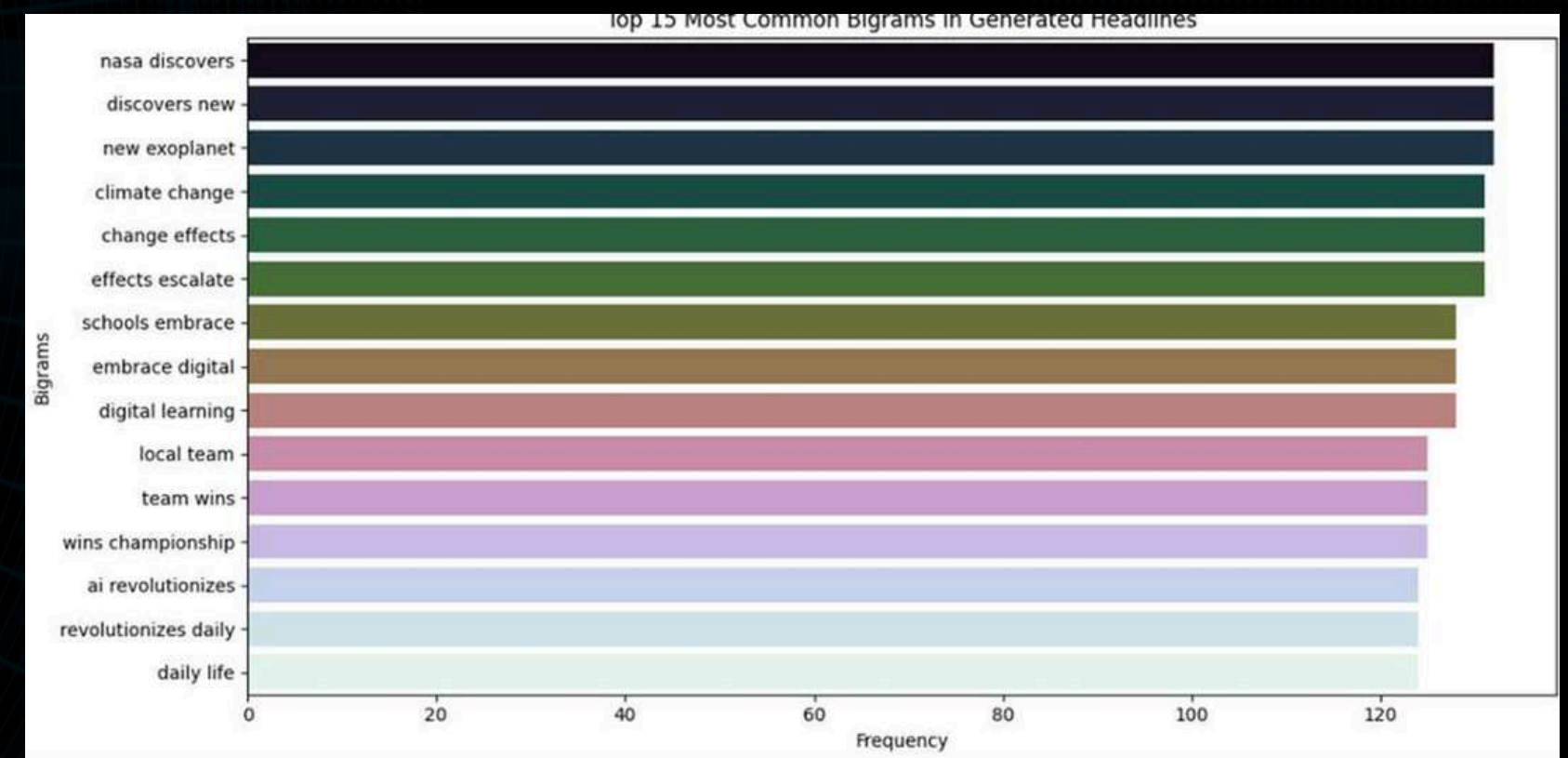
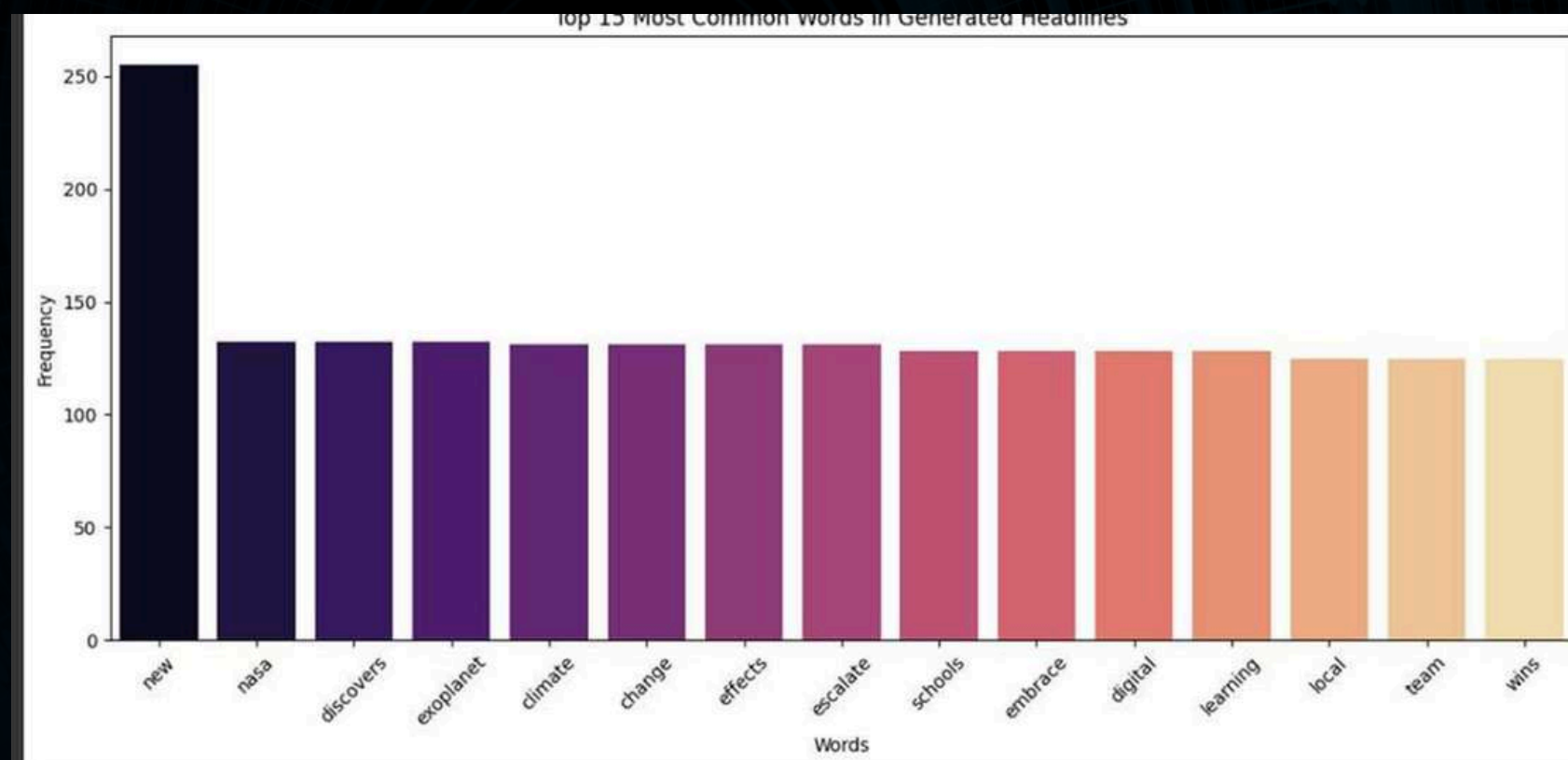
- Importing and cleaning the dataset.
- Splitting data into training and test sets. Tokenizing input text and headlines.
- Padding sequences for equal input length.

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



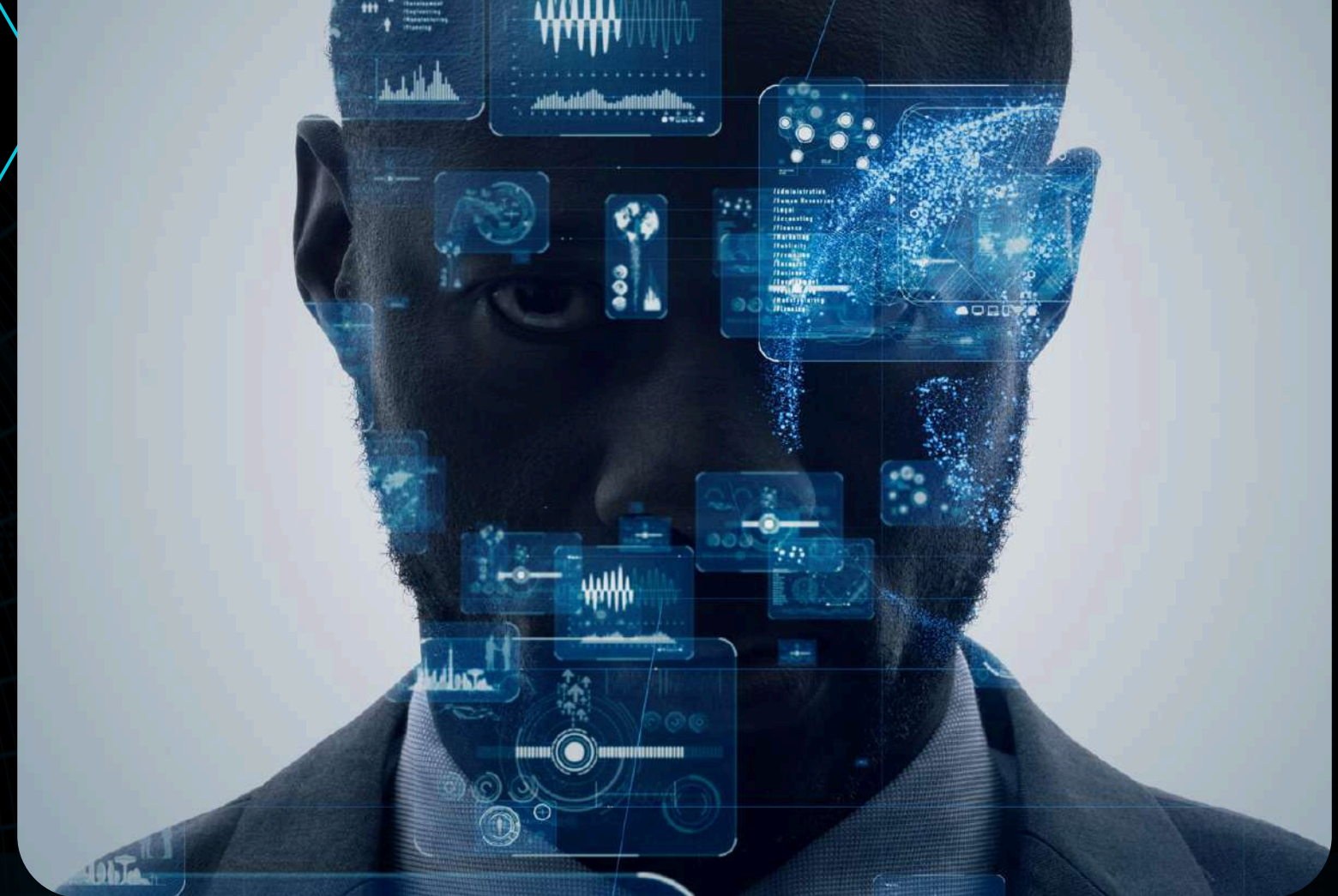
15 Most Common words or diagrams



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.



References

GRU :-

- <https://www.geeksforgeeks.org/gated-recurrent-unit-networks/>

LSTM:-

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

Bahdanau:-

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





Thank You

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