# Individual Final Report

## Abstract

Our Smart News Reader employs advanced Natural Language Processing (NLP) to transform news consumption. With features like news parsing, summarization, zero-shot classification, keyword extraction, and conversational question-answering, it streamlines information retrieval. Despite encountering challenges in implementing the translation component, the application represents a leap in redefining personalized and dynamic news exploration. Through continuous integration of NLP techniques, it addresses information overload, catering to evolving user needs in the digital age.

## Contents



# 1 Introduction

## 1.1 Background

The escalating volume of digital content in today's information age necessitates the development of advanced tools for efficient information consumption. As the digital landscape expands, users face the challenge of navigating vast amounts of textual information. In response to this, the Smart News Reader application emerges as a solution to streamline news exploration, leveraging cutting-edge Natural Language Processing (NLP) techniques. This application aims to enhance the user experience by providing features such as summarization, question-answering, language translation, zero-shot classification, and keyword extraction. Through the integration of these features, users can gain deeper insights into news articles, breaking down language barriers, condensing lengthy content, and extracting key information. The application's foundation lies in addressing the growing demand for more effective and interactive methods of consuming digital news.

## 1.2 Objectives

* Introduce the Smart News Reader application.
The Smart News Reader application is designed to revolutionize the way users interact with news articles, offering a user-friendly interface and a suite of NLP features.

* Highlight the importance of NLP in news exploration.
In the era of information overload, NLP plays a crucial role in enhancing the efficiency and effectiveness of news exploration. The Smart News Reader leverages NLP techniques to empower users with tools that facilitate content summarization, language translation, dynamic question-answering, and more.

## 2.4 Keyword Extraction

The idea behind key-Word extraction is to give a much smaller overview to the users about the main idea about the article.
Although there are multiple methods for doing this including tf-idf, YAKE, etc. ,these models are statistical and does not take context into consideration. An alternative that takes context, is using a transformer based model for key-phrase generation but this model does not guarantee that the key-phrase exists in the main body.

So we used the python package called KeyBERT, this uses BART sub-word embeddings and with simple cosine similarity finds the word/phrase that is most similar to the document.

### 2.5 Conversational QA

The idea behind this feature is to enable the users to ask questions regarding the article and get concise answers to it. But we wanted this to be conversational, instead of comprehension answering.

Initially, we implemented the Bert-Large fine-tuned on SQUAD dataset. There were many problems with this implementation including, truncation due to max token limits and the model being non-conversational.

## 4 Conclusion

The Smart News Reader application represents a significant leap forward in redefining the landscape of news consumption. By addressing the challenges posed by the increasing volume of digital content, the application introduces a user-centric approach to news exploration. The incorporation of advanced NLP features, including summarization, question-answering, language translation, zero-shot classification, and keyword extraction, empowers users with versatile tools for extracting, comprehending, and interacting with news articles.

As we have explored in-depth, the Summarization component condenses lengthy articles into informative summaries, the Zero-Shot Classification module categorizes articles dynamically. Furthermore, the Keyword Extraction and Question-Answering features contribute to a more insightful and interactive news exploration experience.

In conclusion, the Smart News Reader not only addresses the immediate challenges of information over- load but also anticipates the evolving needs of users in an increasingly digital world. The continuous integra- tion of state-of-the-art NLP techniques ensures that the application remains at the forefront of facilitating efficient and engaging news consumption. Through this innovative approach, the Smart News Reader sets a new standard for personalized and dynamic news exploration.

Approximately 35%