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INTRODUCTION

~~BACKGROUND OF THE STUDY:~~

The ~~demand~~need for ~~effective~~efficient text summarization has grown ~~rapidly, particularly~~quickly, especially in industries ~~such as~~like digital news and media. With ~~an ever-increasing volume~~the continuous surge of information, the ability to ~~generate~~ create clear and concise ~~and coherent~~ summaries of ~~large~~lengthy documents has become ~~crucial~~essential for both readers and businesses. The field of text summarization has ~~evolved significantly~~advanced considerably since ~~[1] pioneering~~ [1] early work, where he ~~proposed~~introduced one of the first methods for automatic summarization based on word frequency in his paper "The Automatic Creation of Literature Abstracts." This ~~early~~pioneering model laid the ~~groundwork~~foundation for future ~~advancements~~developments in the ~~field~~area.

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Over ~~the years~~time, advancements in summarization techniques have ~~led to~~resulted in more sophisticated models. In 1989, ~~[2], a key figure in the development of text retrieval systems, contributed significantly to the evolution of summarization~~[2], a major contributor to the development of text retrieval systems, significantly advanced the field with his paper "Automatic Text Processing: The Transformation, Analysis, and Retrieval of Information by Computer." Salton's work introduced vector space models, ~~which used~~employing statistical methods to enhance the ~~efficiency~~effectiveness of text processing.

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By the 2000s, more ~~complex~~advanced and automated systems had emerged. ~~[3]~~[3], in his paper "Automated Text Summarization and the SUMMARIST System," contributed to the ~~development~~creation of SUMMARIST, a system ~~that combined~~combining statistical and symbolic approaches for ~~creating~~ automated ~~summaries.~~summarization. Around the same time, ~~[4]~~[4] introduced the ROUGE evaluation metric in his ~~work~~paper "ROUGE: A Package for Automatic Evaluation of Summaries," which became ~~an industry~~a widely accepted standard for ~~evaluating~~assessing the quality of generated summaries. ROUGE is now ~~widely~~extensively used to ~~assess~~evaluate the performance of modern models, including the T5 model ~~that is~~ fine-tuned in this study.

The field ~~further progressed~~continued to evolve with ~~[5]~~[5] paper "Centroid-based Summarization of Multiple Documents," which introduced extractive methods for summarizing multiple documents ~~at once.~~simultaneously. These ~~foundational~~key studies, along with ~~advancements~~progress in deep learning, have ~~paved~~opened the ~~way~~door for modern models like T5, which can be fine-tuned for greater ~~precision~~accuracy and relevance.

This study builds ~~on~~upon these historical ~~advances~~advancements by fine-tuning the T5-small model ~~using~~on a ~~condensed~~reduced version of the CNN/Daily Mail dataset. ~~The aim~~Its goal is to ~~address~~overcome the limitations posed by smaller datasets, which often ~~result in suboptimal~~lead to less effective summarization~~ performance~~. The ~~enhancements achieved~~improvements seen in ROUGE scores through this ~~approach~~method show ~~significant improvements~~ notable progress in the model's ability to ~~generate~~produce accurate, contextually relevant summaries ~~at a low~~with minimal computational ~~cost~~resources. These results ~~underscore~~emphasize the potential ~~for~~of such models ~~in~~for applications like real-time news aggregation, personalized content delivery, and more.

~~RATIONALE FOR THE STUDY:~~

This study ~~aims~~seeks to address the challenges ~~posed by the limitations of~~associated with traditional text summarization models, ~~especially~~particularly when ~~trained on~~working with smaller datasets. By fine-tuning the T5-small model ~~on~~using a ~~reduced~~condensed version of the CNN/Daily Mail dataset, the study ~~seeks~~aims to ~~improve~~enhance the model's performance ~~in terms of~~, as measured by ROUGE scores~~,~~ —a standard metric ~~used to assess~~ for evaluating

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summarization quality. The improvements in ROUGE-1, ROUGE-2, and ROUGE-L scores ~~achieved in this study highlight~~demonstrate the model's ~~enhanced~~improved ability to capture key ~~data points~~information while keeping computational costs low. ~~The~~These findings ~~have~~hold significant ~~implications~~value for the digital technology ~~industry~~sector, where real-time summarization, news aggregation, and personalized content delivery are ~~critical for~~essential to meeting user ~~demands.~~needs.

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5. Radev, D.R., et al., *Centroid-based summarization of multiple documents.* Information Processing & Management, 2004. **40**(6): p. 919-938.

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