Text summarization condenses key ideas from a document or related documents, reducing the time needed to extract essential information. This is vital in today's data-rich era, spanning fields such as journalism, scientific research, and finance. With new research articles published daily, each scientific paper begins with an abstract summarizing the content. Recently, research highlights have gained attention as an addition to abstracts, providing a bulleted summary of key findings to help readers quickly understand the main contributions. Abstractive summaries, which resemble human-written text, are preferred over extractive summaries that only copy and rearrange portions of the original text.

To summarize, we address the key challenges of abstractive summarization systems for research publications: (i) the need for a dataset to generate research highlights, as recent papers often include both an abstract and a bulleted list of key findings for quick understanding (ii) the limitations of traditional extractive summarization methods, underscoring the necessity for more advanced abstractive summaries; and (iii) The shortcomings of traditional metrics in evaluating abstractive models and ensuring summary consistency.

Firstly, we explored generating research highlights using deep learning, analyzing the impact ofinput embeddingson model performance, and proposed **MixSub**, a multidisciplinary dataset for highlight generation. Secondly, we examined the impact of named entities on the generation of research highlights.Thirdly, we evaluated which metrics are most suitable for assessing scientific document summarization systems and analyze the factual consistency of the generated summaries at the entity level.Fourthly, we delved into the effectiveness of pre-trained language models in generating accurate titles for research papers.Fifthly, we introduced the **SilverCSPubSum** dataset with GPT-3.5-generated pico summaries, reducing human annotation cost. We evaluated their quality, compared them to traditional summaries.