SMARTSUMM: COMPARING ABSTRACTIVE & EXTRACTIVE SUMMARIZATION TECHNIQUES

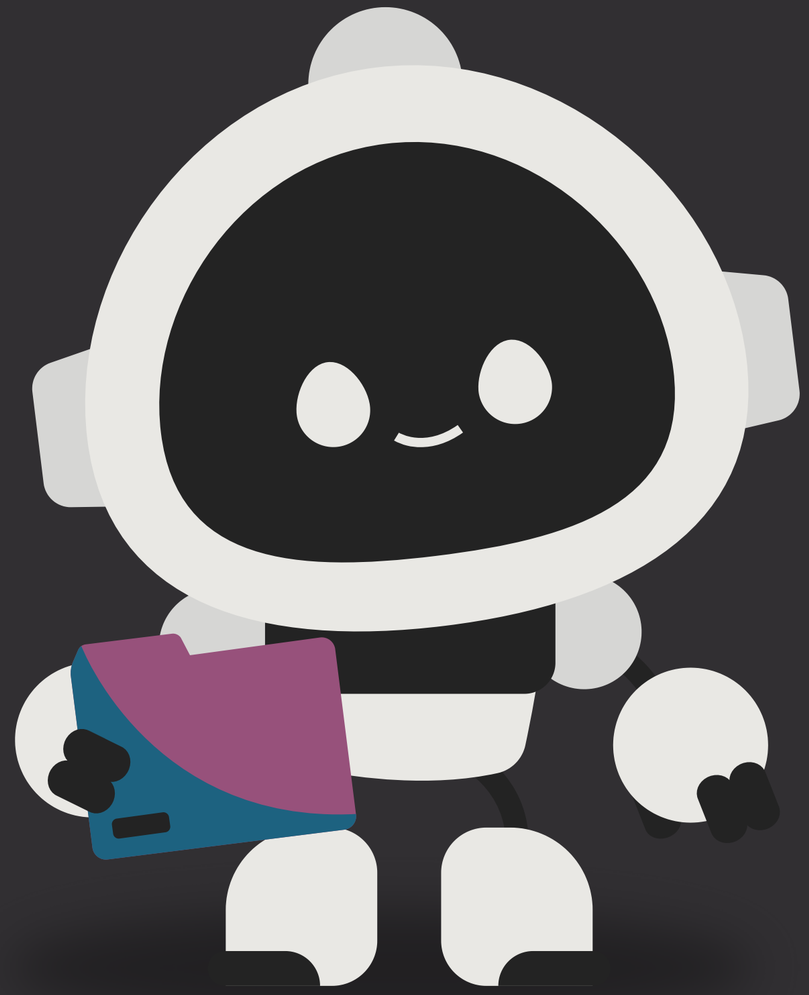
INTRODUCTION

Goal:

Compare modern abstractive models (BART, T5) with the classic extractive method (TextRank) using real news data.

Why this topic?

- Summarization is essential in NLP
- Transformers are popular—we tested if they’re better
- We wanted real-world experience with cutting-edge tools



NLP TECHNIQUE & DOMAIN

Domain: News Articles (XSum dataset)

Techniques Used:

- BART and T5 for abstractive summarization
- TextRank for extractive summarization

Why News?

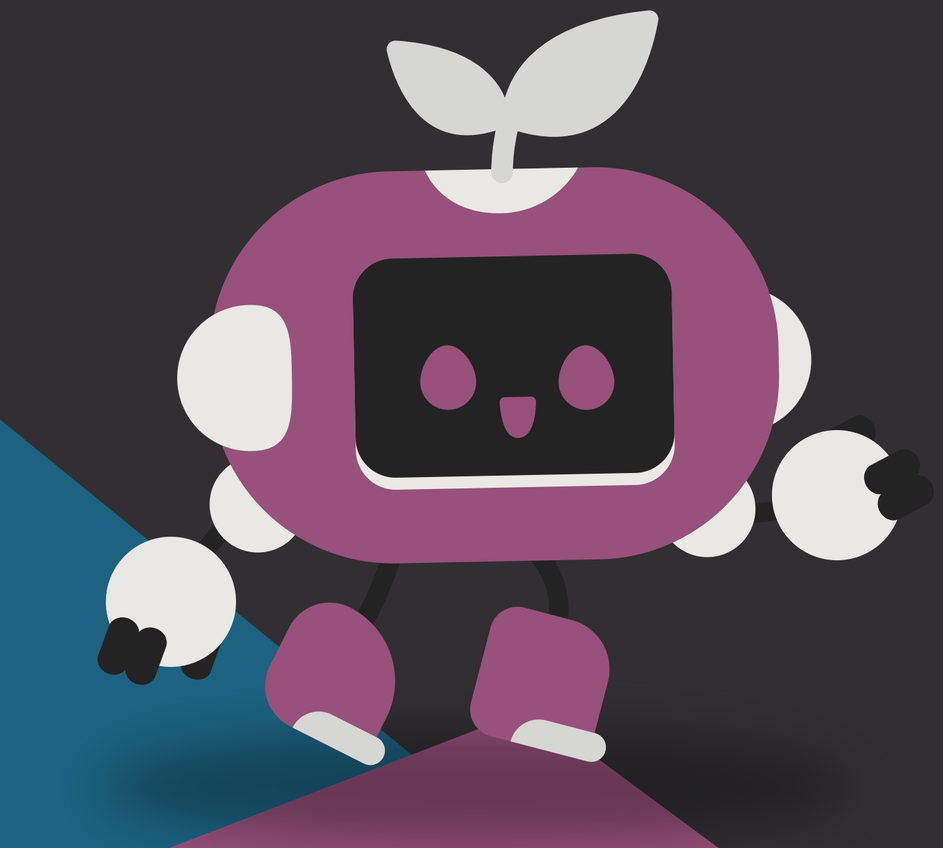
- Articles are long, need concise summaries
- Great testbed for evaluating summarization models

SYSTEM FUNCTIONALITY & RESULTS

- Input: News article from XSum
- Models generate summaries
- Results compared using ROUGE scores
- Outputs saved in CSV for analysis

Model	ROUGE-1	ROUGE-2	ROUGE-L
BART	0.48	0.25	0.41
T5	0.2	0.04	0.14
TextRank	0.16	0.03	0.11

AI TO IMPROVE SOLAR PANEL EFFICIENCY



Artificial intelligence is crucial in improving the efficiency of solar panels by analyzing weather data, sunlight intensity, and panel tilt angles in real time. Machine learning algorithms enable AI to predict daily weather patterns and adjust the orientation of the panels to capture maximum sunlight

CHALLENGES & SOLUTIONS

Slow inference with Transformer models → used caching and batch processing

ROUGE limits → combined with manual review to check summary quality

Short or incomplete summaries → tuned generation parameters (min_length, max_length)

LESSONS LEARNED & FUTURE WORK

- TRANSFORMER MODELS DELIVER BETTER SUMMARIES BUT NEED TUNING
- EXTRACTIVE METHODS ARE FAST BUT LESS ACCURATE
- FUTURE PLANS:
- FINE-TUNE MODELS ON DOMAIN-SPECIFIC DATA
- EXPLORE NEWER MODELS LIKE PEGASUS
- BUILD A USER-FRIENDLY SUMMARIZATION APP

GITHUB: SMARTSUMM REPO

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THANK YOU