PROJECT TITLE:
AI-Text Summarizer

PRESENTED BY : -

STUDENT NAME: AAYUSH RAJ

COLLEGE NAME: GOVERNMENT ENGINEERING COLLEGE WEST CHAMPARAN

DEPARTMENT: CSE (CYBER SECURITY)

EMAIL ID: AAYUSH15RAJ0@GMAIL.COM

AICTE STUDENT ID: STU6447ad55804fe1682419029

OUTLINE

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PROBLEM STATEMENT

People often deal with long-form content (e.g., articles, reports, documents) which is time-consuming to read. There is a growing need for intelligent systems that can generate concise and meaningful summaries automatically, helping users grasp essential information quickly without reading the full content.

PROPOSED SOLUTION

This project proposes an AI-powered text summarizer that uses pretrained NLP models to automatically generate summaries of large texts. It features:

- A user-friendly interface built with Streamlit.
- Integration with Hugging Face's transformers to load summarization models like BART and T5.
- File upload & text input options.
- Downloadable summaries in ***.txt*** format.

SYSTEM APPROACH

- **Frontend/UI**: Streamlit with custom HTML/CSS styling.
- **Backend**: Python with Hugging Face Transformers.
- **Libraries**: transformers, torch, streamlit.
- **System Requirements**:

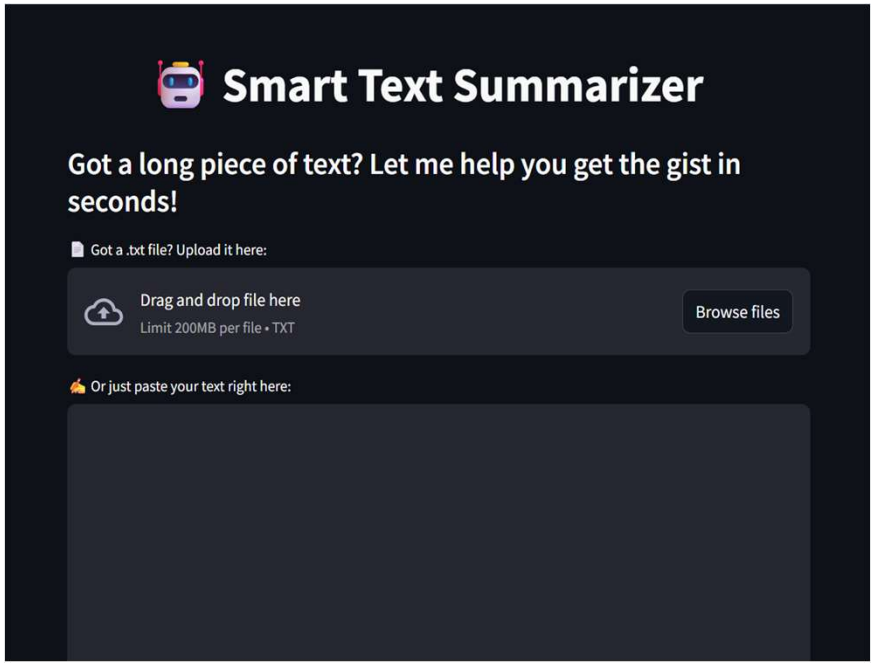
1. Python 3.8+
2. CPU (no GPU needed)
3. Internet connection for model downloading

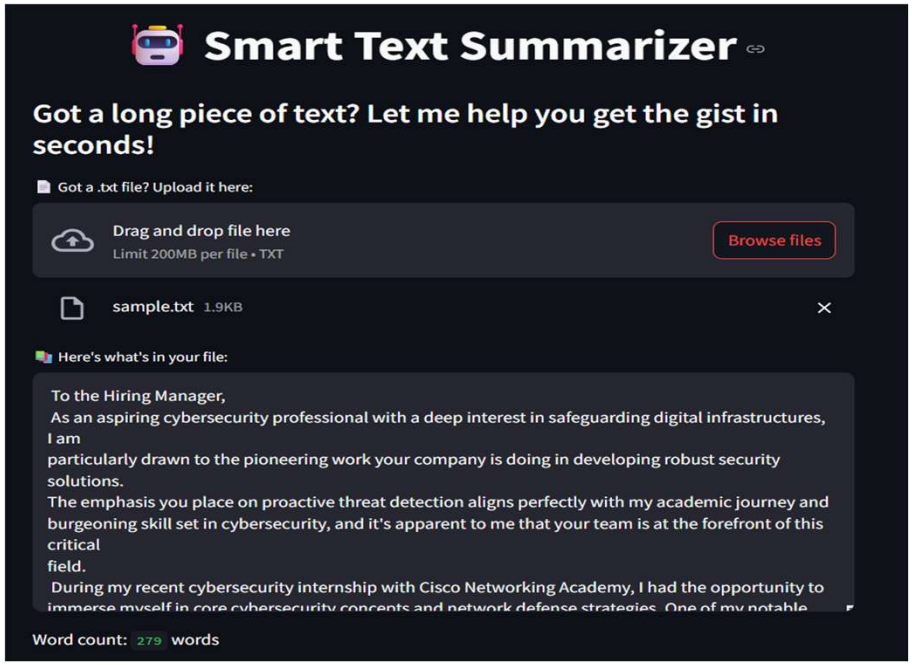
ALGORITHM & DEPLOYMENT

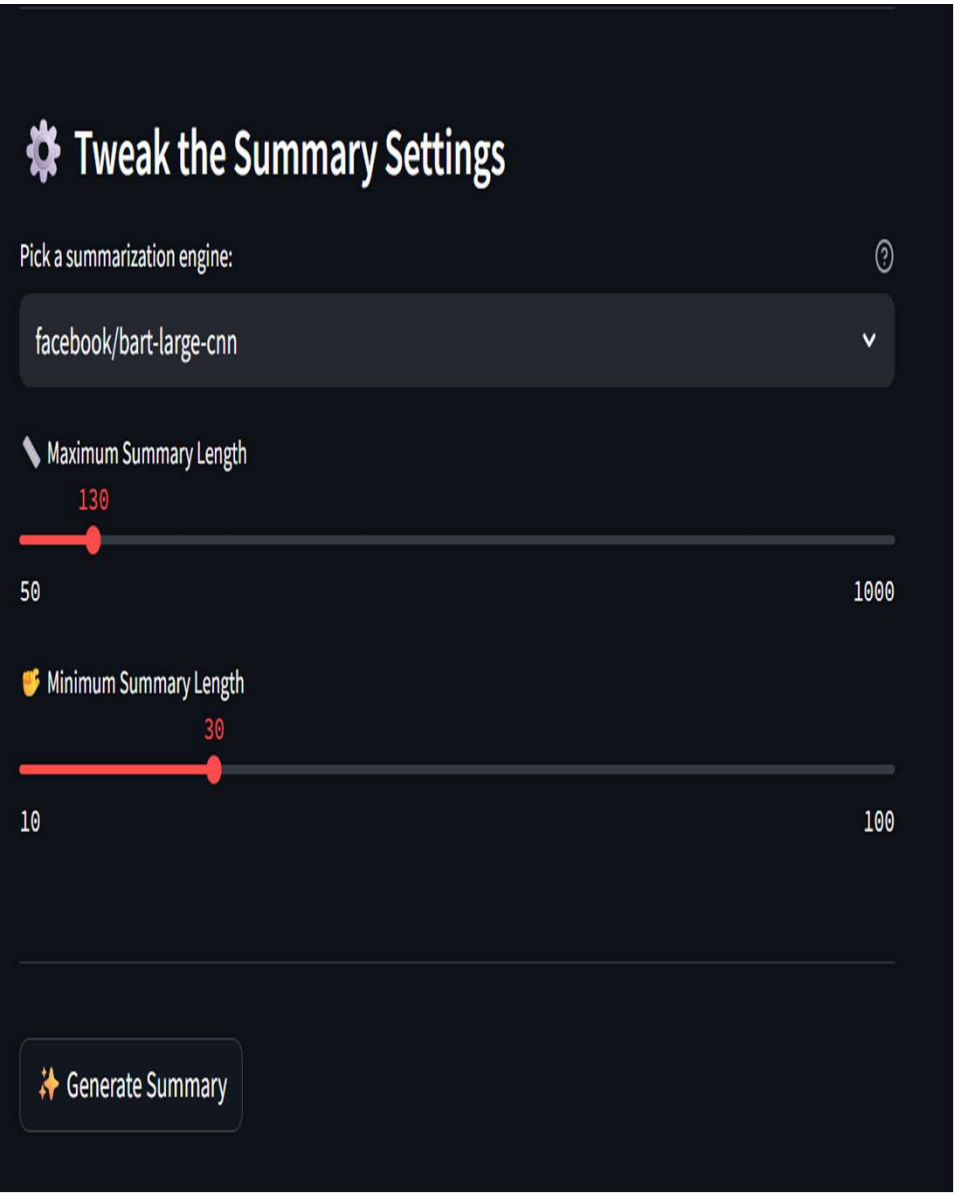
- **Algorithm**: Hugging Face pipeline("summarization") using:
  - facebook/bart-large-cnn (for high-quality summaries)
  - t5-small (for lightweight summarization)
- **Training**: Not required — uses pretrained models.
- **Inference**: Text is cleaned, passed to the summarizer with defined ***min_length*** and ***max_length***, and results are shown to the user.
- **Deployment**: Local app using Streamlit (can be deployed via Streamlit Cloud or other platforms).

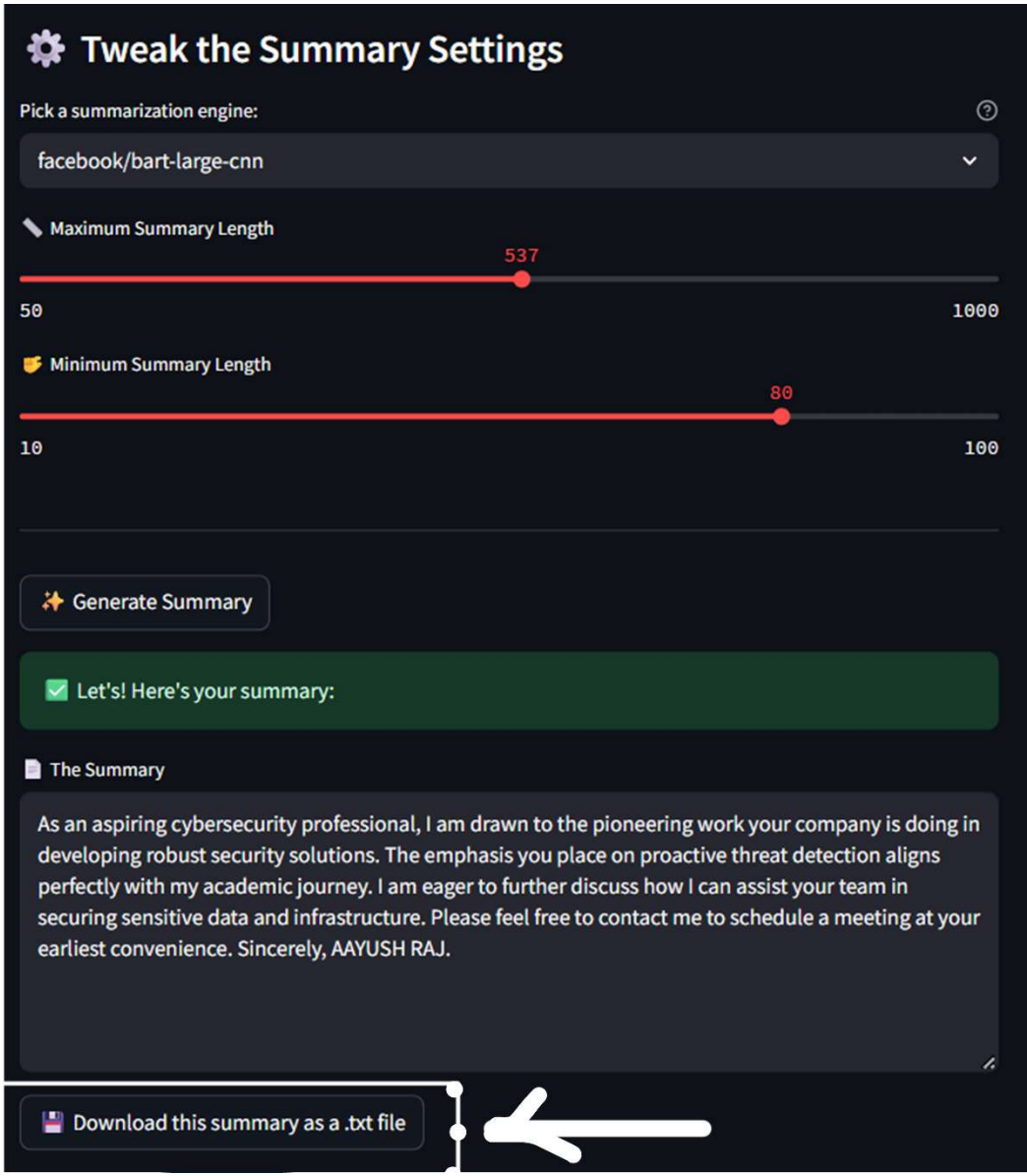
RESULT

- Summarizer can convert texts of 300+ words into summaries of 50–130 words.






Tweak the Summary Settings
Pick a summarization engine:
facebook/bart-large-cnn
Maximum Summary Length
130
50
1000
Minimum Summary Length
30
10
100
Generate Summary


Tweak the Summary Settings
Pick a summarization engine:
facebook/bart-large-cnn
Maximum Summary Length
537
50
1000
Minimum Summary Length
80
10
100
Generate Summary
Let's! Here's your summary:
The Summary
As an aspiring cybersecurity professional, I am drawn to the pioneering work your company is doing in developing robust security solutions. The emphasis you place on proactive threat detection aligns perfectly with my academic journey. I am eager to further discuss how I can assist your team in securing sensitive data and infrastructure. Please feel free to contact me to schedule a meeting at your earliest convenience. Sincerely, AAYUSH RAJ.
Download this summary as a .txt file

CONCLUSION

The AI Text Summarizer project demonstrates the power of modern Natural Language Processing (NLP) using state-of-the-art transformer models like BART and T5. By leveraging Hugging Face's transformers library and integrating a user-friendly Streamlit interface, we created a highly accessible tool capable of summarizing large volumes of text accurately and efficiently.

The project successfully meets the goals of:

- Providing an intuitive web-based interface where users can paste or upload text files.
- Automatically summarizing lengthy content into concise, meaningful summaries.
- Offering customization options such as model selection and length tuning.
- Running efficiently on CPUs, making it accessible to users with limited hardware resources.

The integration of CSS, HTML, and JavaScript in the Streamlit app enhances the visual aesthetics and usability, creating a polished and professional user experience. This tool is especially useful for students, researchers, content creators, and anyone needing quick insights from large textual data.

FUTURE SCOPE

- Add support for more models and languages.
- Implement speech-to-text summarization.
- Improve UI using frontend frameworks like React.
- Integrate with Google Docs or PDFs.
- Host as a full-fledged web service.

REFERENCES

- Hugging Face Transformers: https://huggingface.co/transformers/
- Streamlit Documentation: https://docs.streamlit.io/
- BART Paper: https://arxiv.org/abs/1910.13461
- T5 Paper: https://arxiv.org/abs/1910.10683
- GitHub Link: https://github.com/Aayush-Raj-Singh/AI-Text-Summarizer.git

Thank you