# TextMorph – Advanced Text Summarization and Paraphrasing System

A world-class presentation on an AI-powered web application for text summarization and paraphrasing.

# Domain & Title

Presenter

Bhavana Bogoju

Title of Project

# TextMorph – Advanced Text Summarization and Paraphrasing System

# Problem Statement

Addressing the challenges of information overload in the digital age.

1

## Information Overload

Users are constantly overwhelmed by a massive volume of text from articles, reports, and digital files

2

## Manual Inefficiency

Processing this data by hand—trying to summarize and reword it—is extremely slow and labor-intensive.

3

## Solution Requirement

This creates a clear need for an AI tool that can instantly summarize content and rephrase text, all while perfectly preserving the original meaning.

# Idea of Project

TextMorph is an AI-powered web app for text summarization and paraphrasing.

It leverages powerful transformer models through APIs like **Hugging Face** and **Groq**. This provides users with instant, high-quality results without the need for any manual model training.

## How It Works:

Users follow a simple four-step process:

1. **Input Text:** Paste text directly or upload a document.
2. **Summarize:** Generate AI-based summaries, choosing between extractive or abstractive methods.
3. **Paraphrase:** Rephrase the content using Groq′s advanced LLM.
4. **Export:** Instantly download the final, processed text.

# Key Features

### Flexible Summary Options

Offers both extractive and abstractive modes.

### Advanced Rephrasing

Utilizes the Groq API for high-speed paraphrasing

### User-Friendly Interface

Developed with Streamlit for an interactive experience.

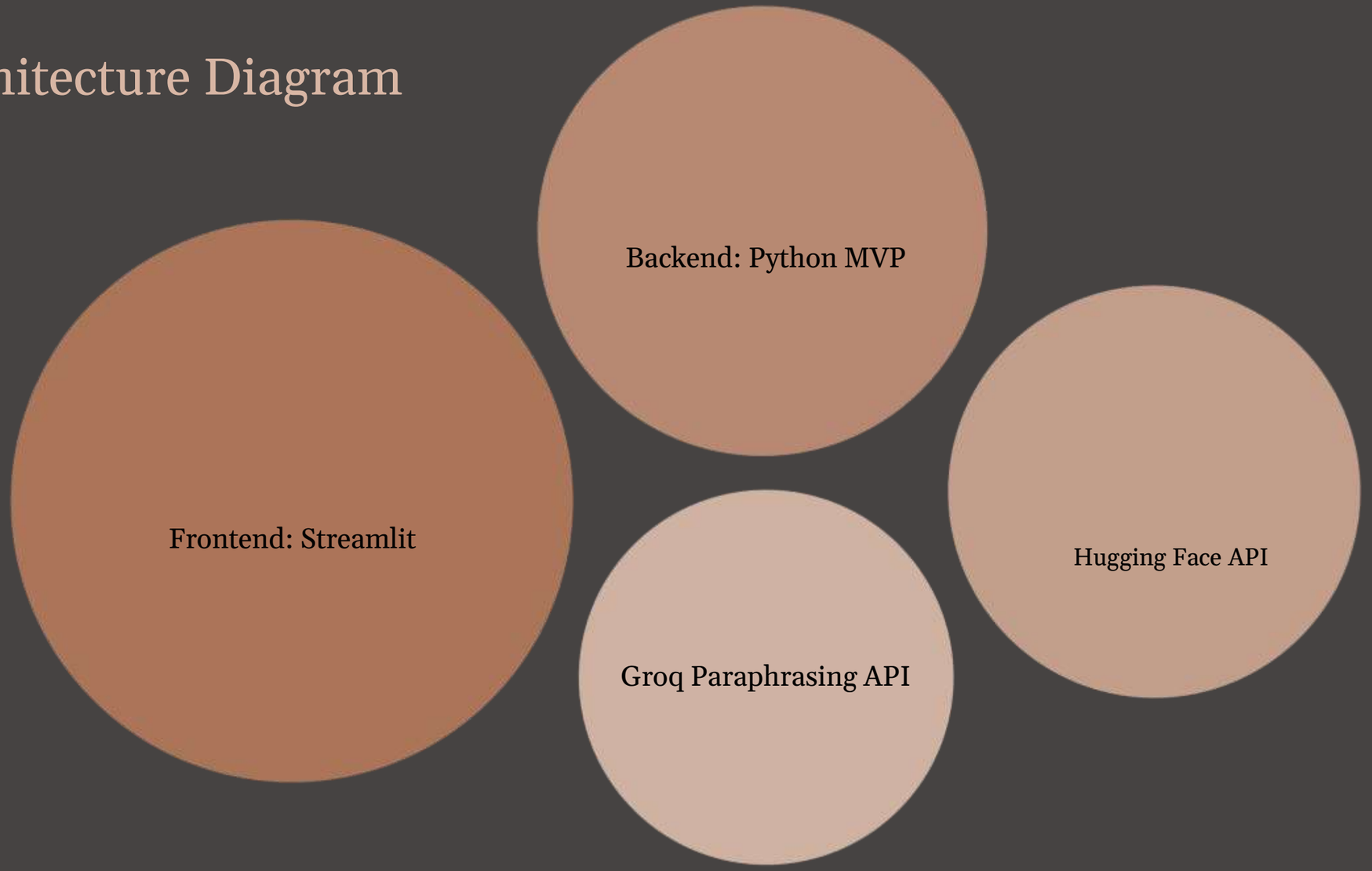
### Result Handling

Allows users to download results and built on a modular pipeline.

### Secure API Handling

Uses environment key protection for safe API access.

# System Architecture Diagram




The system is designed with a clear separation of concerns, leveraging external APIs for heavy lifting.

- External APIs: Hugging Face Inference API (for summarization), Groq API (for paraphrasing)
- Frontend (UI): Streamlit
- Backend (Logic): Python – MVP Pipeline (mvp_pipeline.py)

# Technology Stack

## Languages

Python (core), HTML/CSS via Streamlit components, YAML for configuration

## Modules

- Extractive Summarizer
- Abstractive Summarizer
- MVP Pipeline
- Streamlit UI
- Environment File (hf.env)
- Config File (config.yaml) and Logger

# Methodology

A step-by-step approach to developing and deploying TextMorph.

### Setup

Set up environment and API keys

### Module Implementation

Implement extractive and abstractive summarization modules

### Integration

Integrate both into MVP pipeline

### UI Development

Build Streamlit UI for user interaction

### Testing & Deployment

Run and test the complete application

# Testing

Ensuring reliability and performance across all components.

## Unit Testing

For summarization and paraphrasing

## API Connectivity Testing

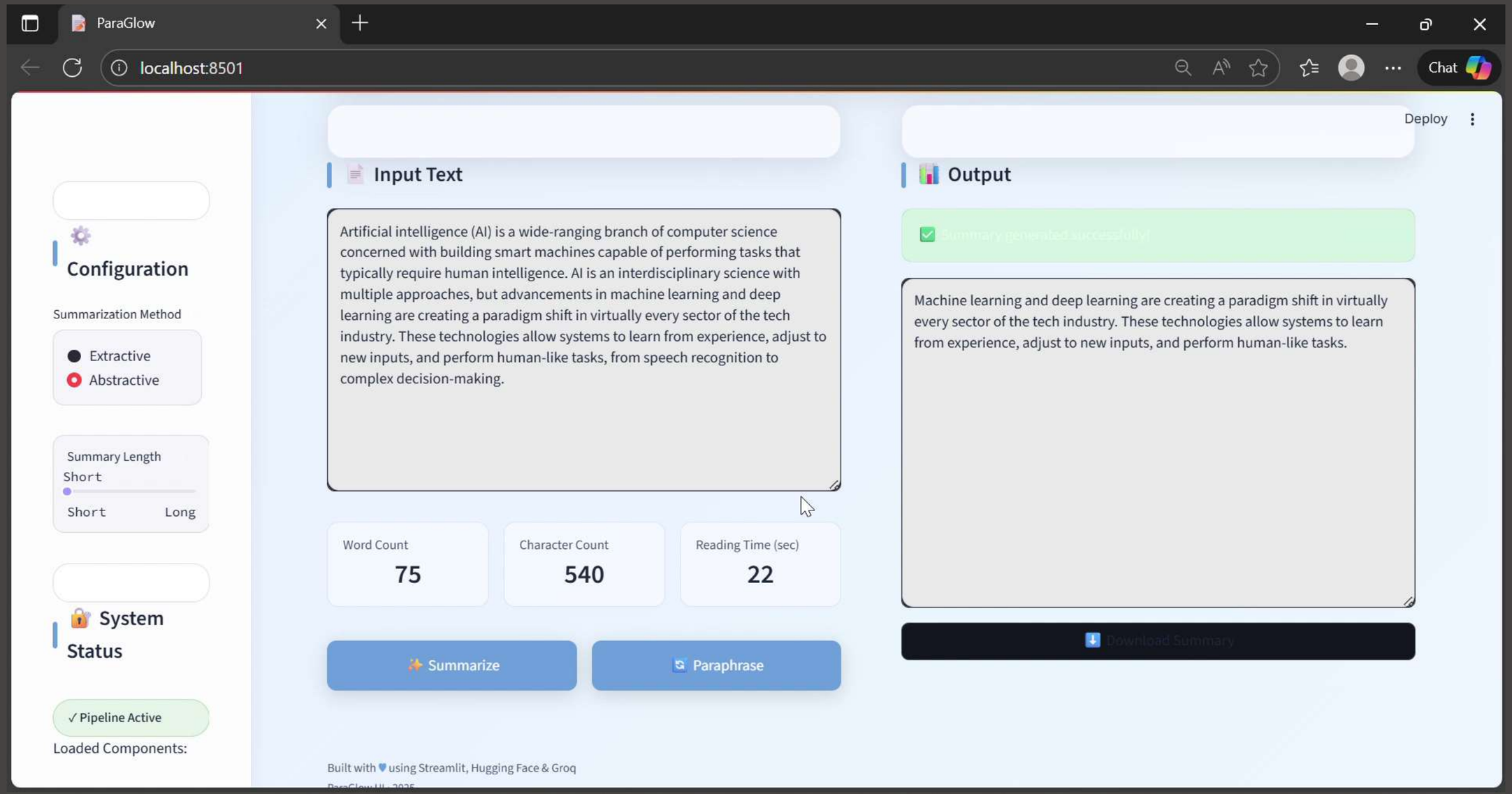
For Hugging Face & Groq

## Integration Testing

Between backend and UI

## Performance Testing

For handling long text inputs efficiently


ParaGlow
localhost:8501
Chat
Deploy
Configuration
Summarization Method
Extractive
Abstractive
Summary Length
Short
Short
Long
System Status
✓ Pipeline Active
Loaded Components:
Input Text
Artificial intelligence (AI) is a wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of the tech industry. These technologies allow systems to learn from experience, adjust to new inputs, and perform human-like tasks, from speech recognition to complex decision-making.
Word Count
75
Character Count
540
Reading Time (sec)
22
✨ Summarize
Paraphrase
Output
Summary generated successfully!
Machine learning and deep learning are creating a paradigm shift in virtually every sector of the tech industry. These technologies allow systems to learn from experience, adjust to new inputs, and perform human-like tasks.
Download Summary
Built with ♥ using Streamlit, Hugging Face & Groq

# About Application

## 🚀 Special Features:

- Works fully online using APIs (no local ML models)
- Saves and downloads output automatically
- Secured API key handling
- Modular structure for scalability
- Ready for MVP to Production upgrade

## Future Enhancements

- Add config.yaml for dynamic settings
- Add Logger & Exception Handling
- Enable file summarization (PDF/DOCX)
- Add multi-language support
- Deploy on Streamlit Cloud or AWS