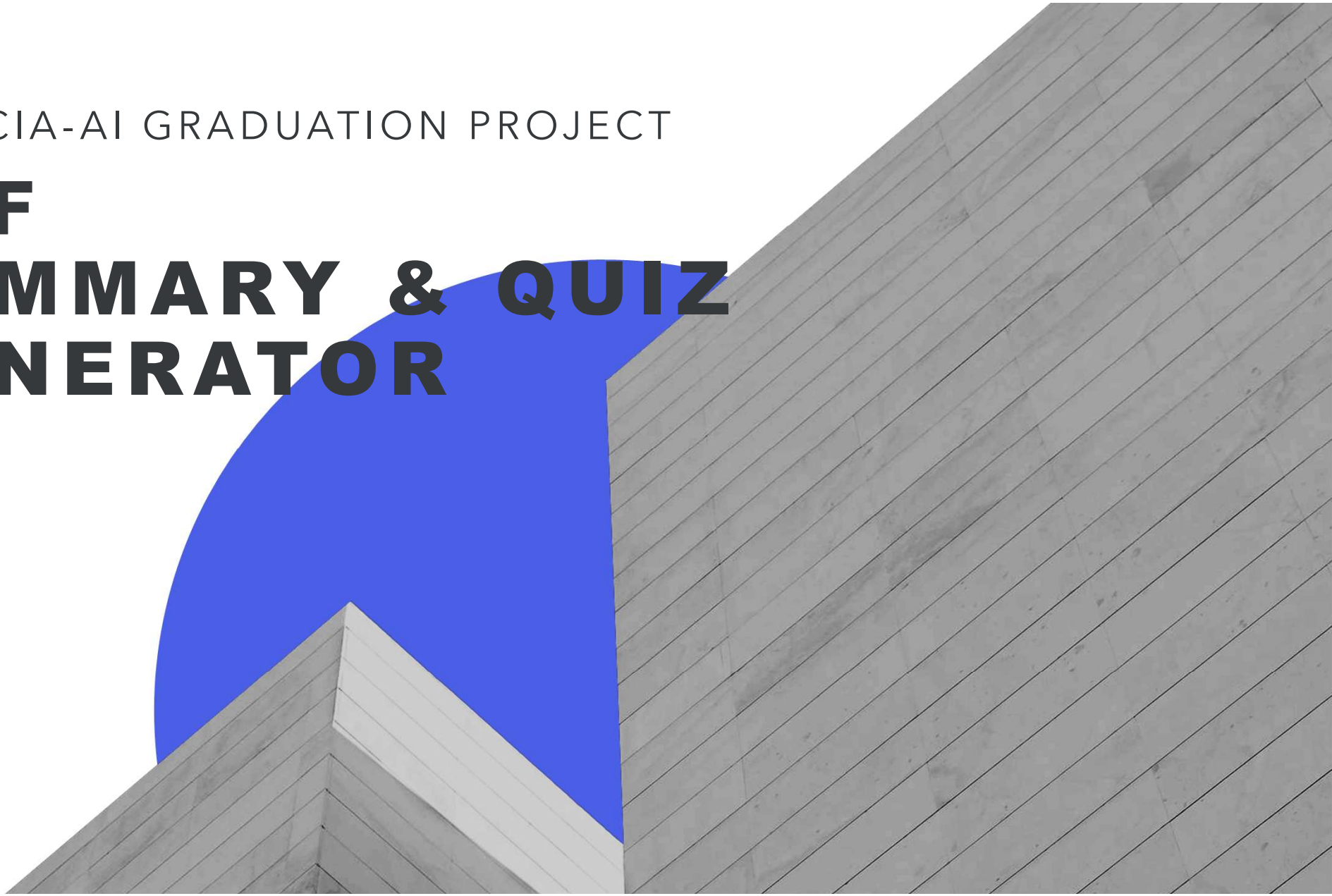
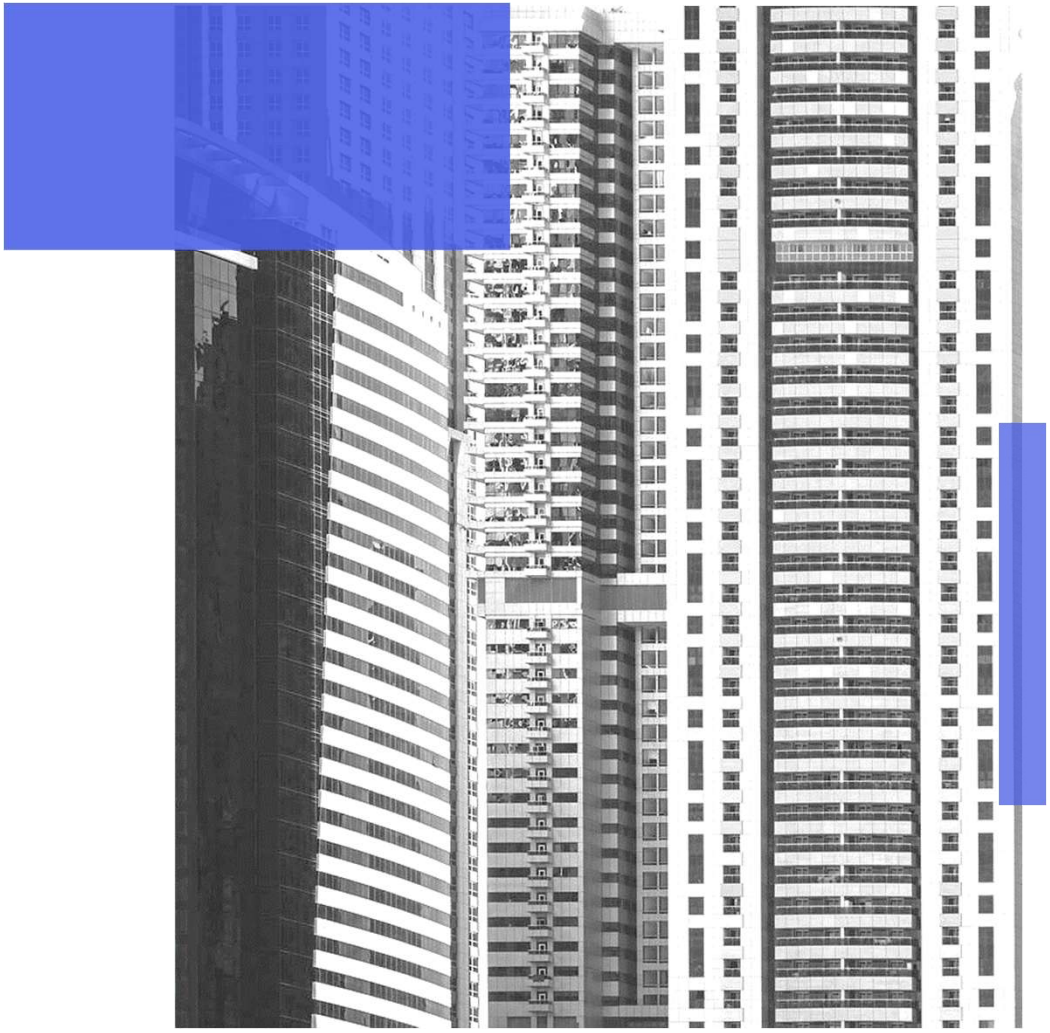
NTI HCIA-AI GRADUATION PROJECT

PDF SUMMARY & QUIZ GENERATOR





AGENDA

INTRODUCTION

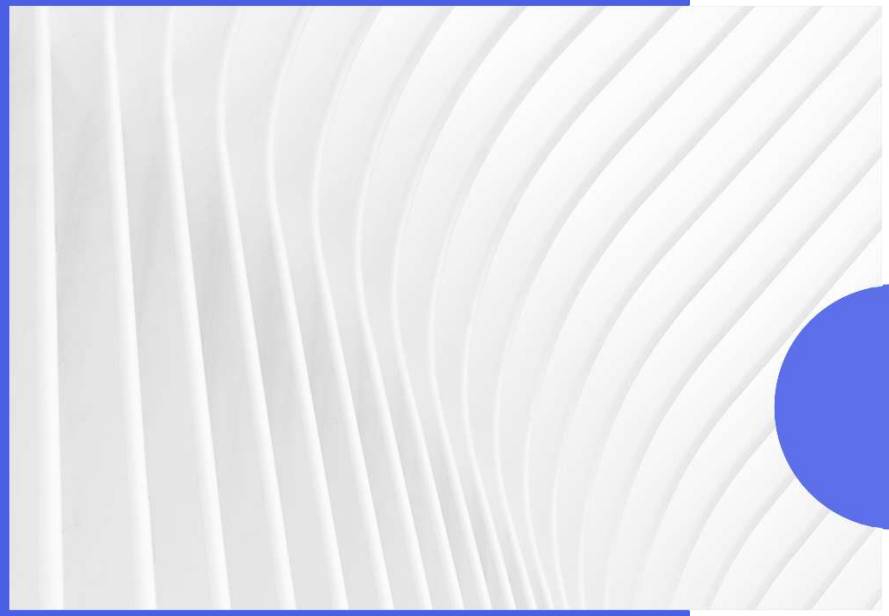
PROBLEM STATEMENT & SOLUTION

TECHNICAL ARCHITECTURE

TECHNICAL CHALLENGES & SOLUTIONS

FUTURE DEVELOPMENT

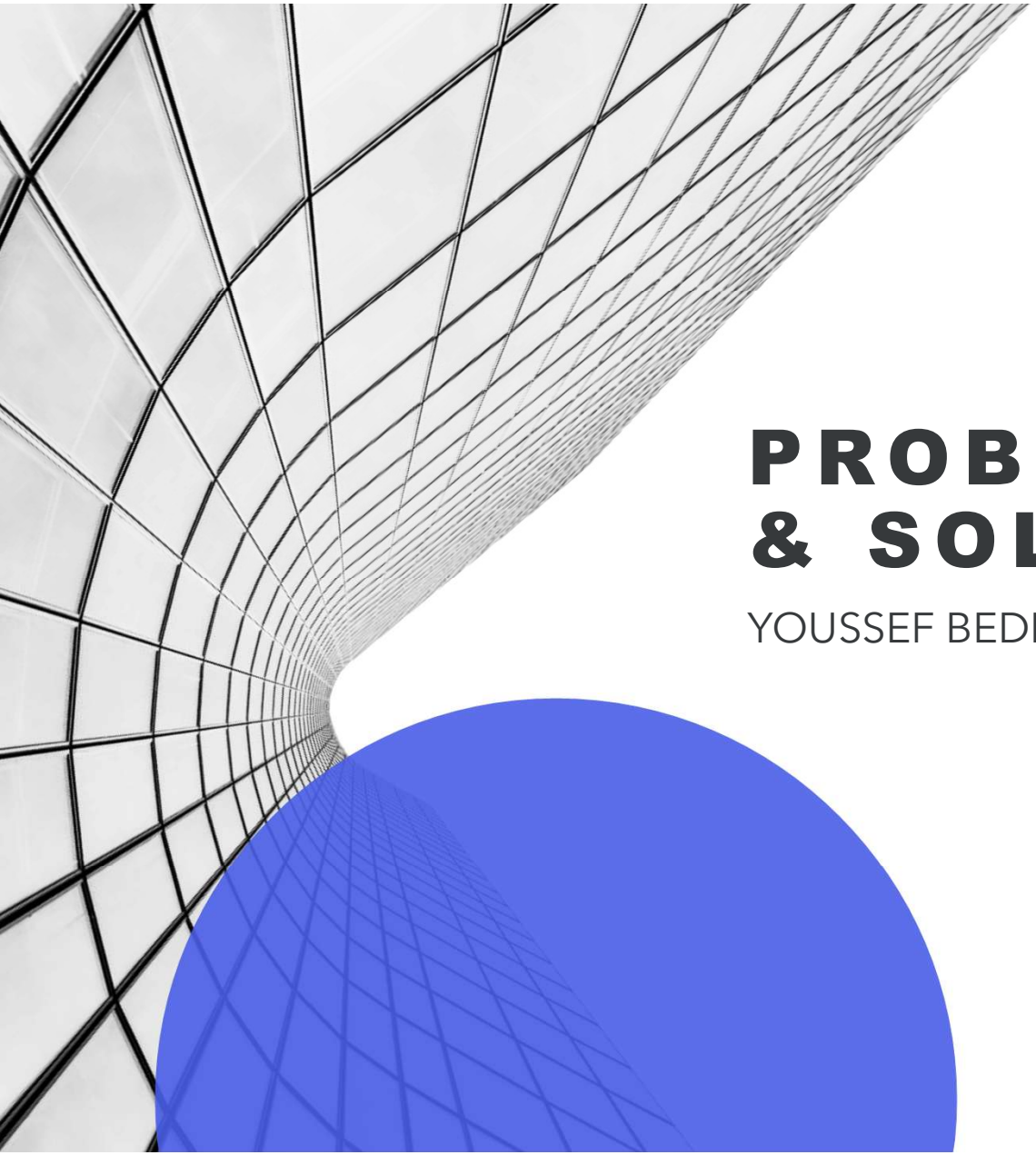
INTRO



The PDF Quiz & Summary Generator allows users to upload PDF documents and automatically generate:

- Detailed Summaries: Concise summaries of the PDF content with the option of manual input for more flexibility
- Interactive Quizzes: Multiple-choice questions with explanations based on document content

The application features a responsive UI with light/dark mode support and performance optimizations for efficient processing.



PROBLEM STATEMENT & SOLUTION

YOUSSEF BEDEIR

PROBLEM STATEMENT

Information Overload:

1- Students & Academic Audience

2- Research Papers

3- Boredom of Reading

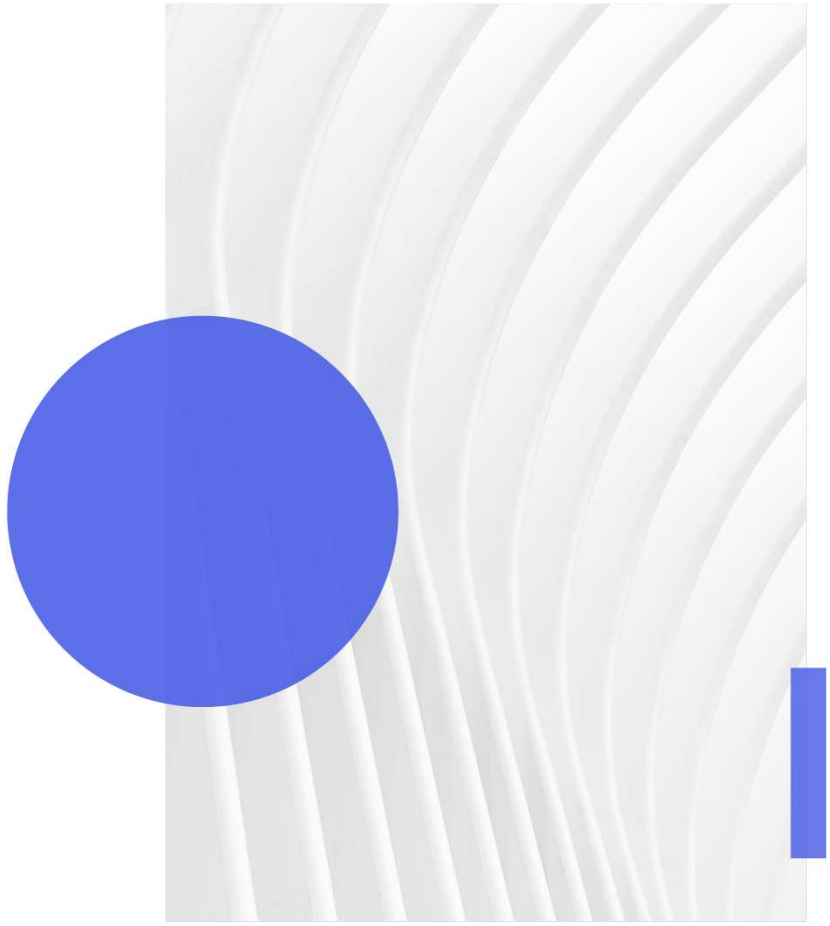
4- Traditional Routine

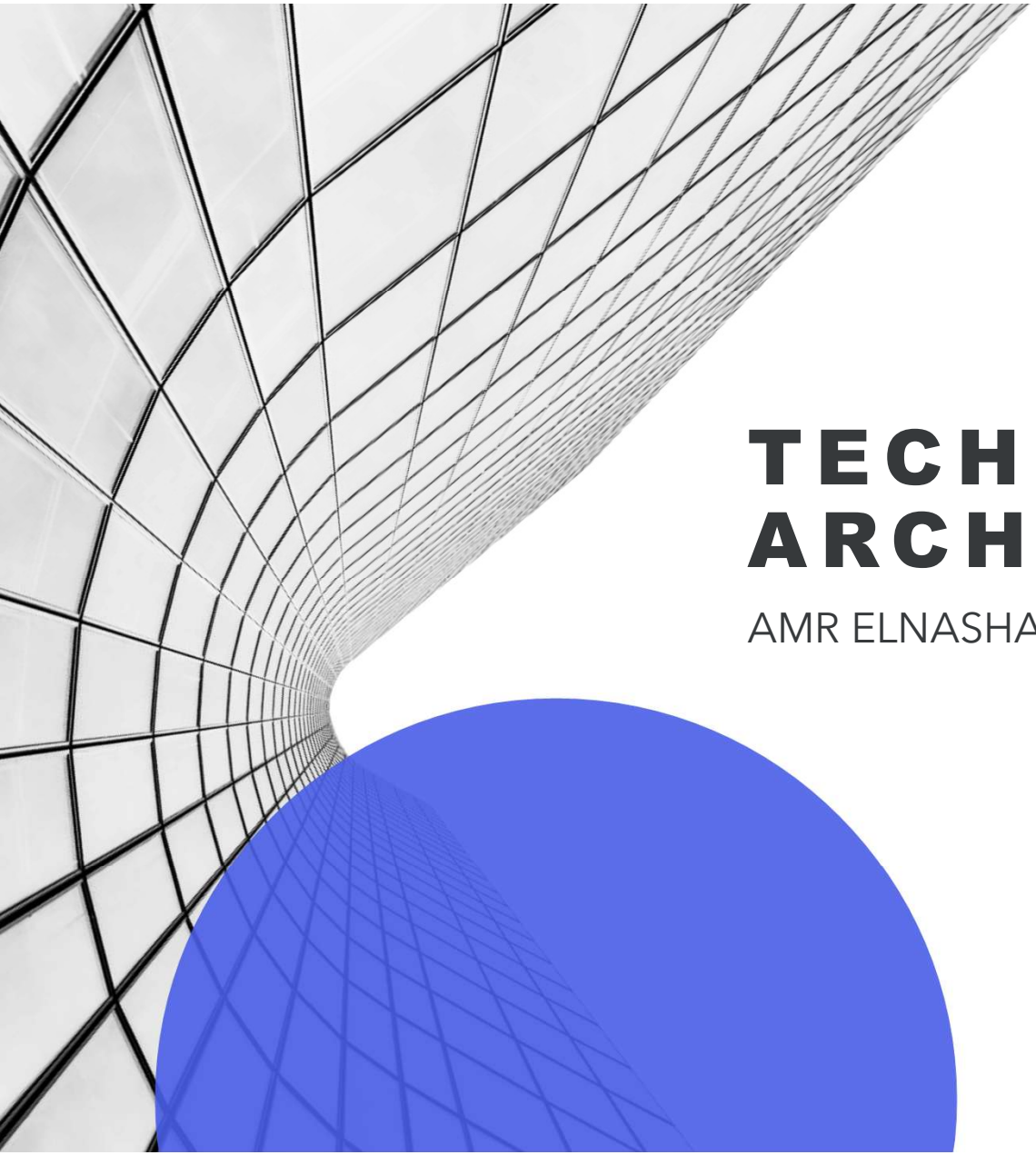
5- Time Consuming

SOLUTION

Here we introduce Our Tool:

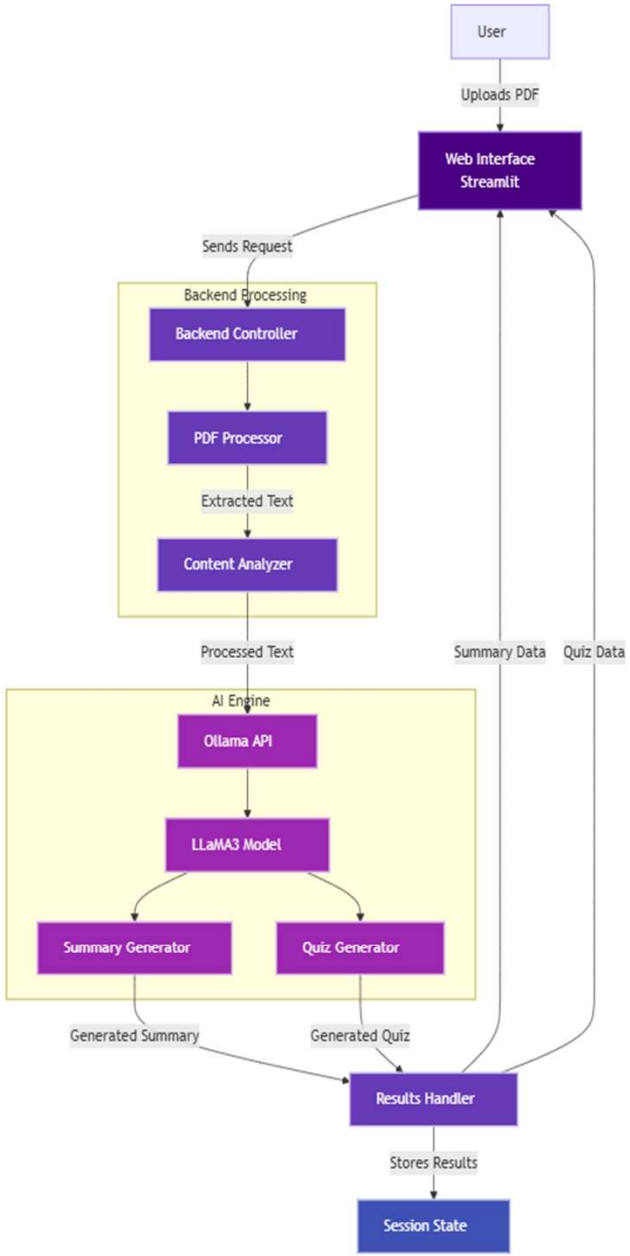
- AI-powered tool that processes any PDF document
- Automatically generates comprehensive summaries
- Creates interactive quizzes based on document content
- Built on LLaMA3 AI model via Ollama
- Web-based interface accessible to anyone





TECHNICAL ARCHITECTURE

AMR ELNASHAR


User
Uploads PDF
Web Interface
Streamlit
Sends Request
Backend Processing
Backend Controller
PDF Processor
Extracted Text
Content Analyzer
Processed Text
Summary Data
Quiz Data
AI Engine
Ollama API
LLaMA3 Model
Summary Generator
Quiz Generator
Generated Summary
Generated Quiz
Results Handler
Stores Results
Session State

WHY OUR TOOL?

- Clean, modern Streamlit web interface
- Simple three-step process:
  - Upload PDF document
  - Select desired output (summary, quiz, or both)
- View and interact with results
- Dark/light mode toggle for user preference
- Interactive quiz interface with immediate feedback

TECHNICAL CHALLENGES & SOLUTIONS

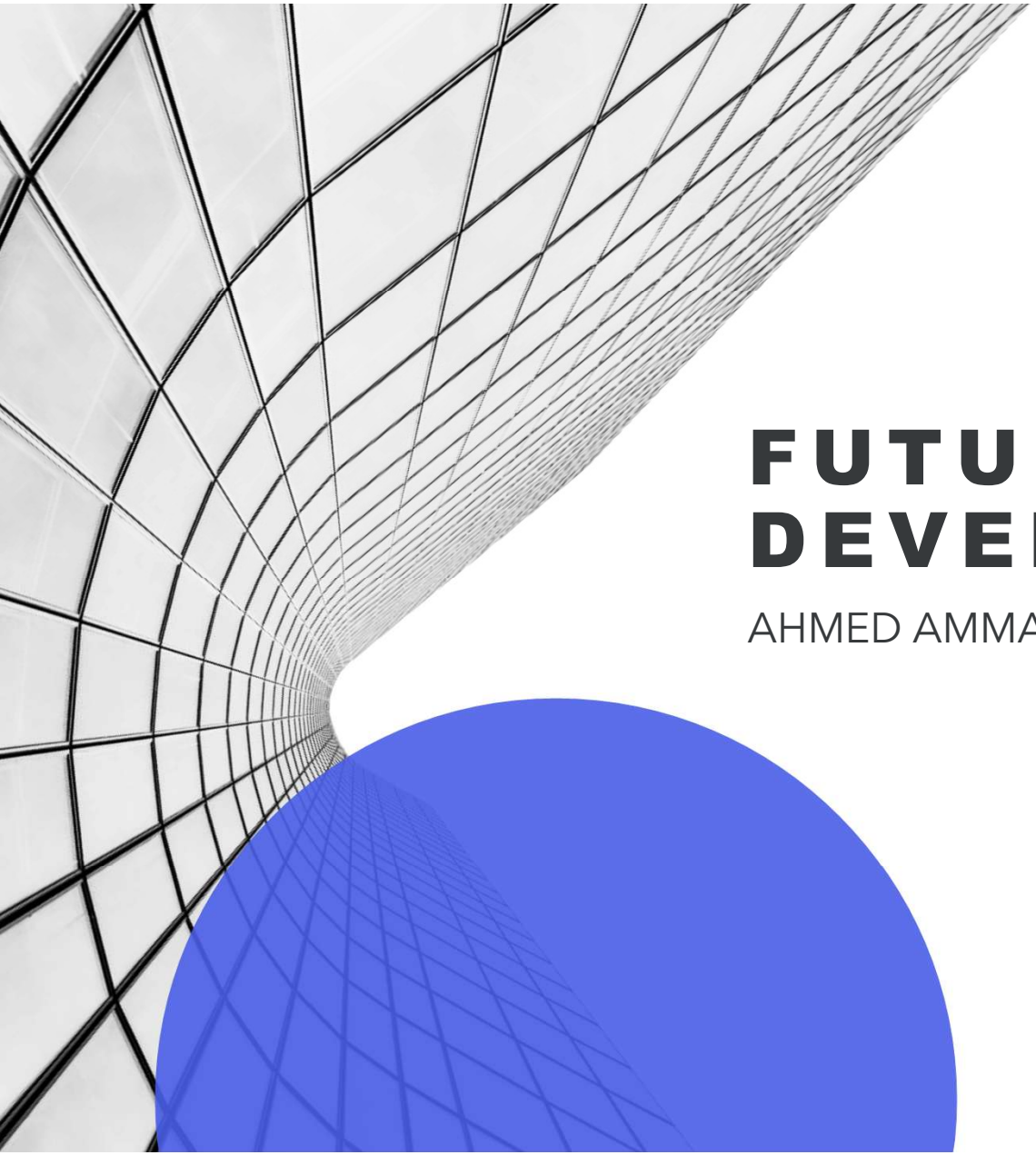
MOHAMMAD ABDELHAY

CHALLENGES

1. Accurate content extraction from varied PDF formats
2. Generating relevant, accurate, well-structured summaries
3. Creating meaningful quiz questions
4. Performance with large documents
5. Maintaining state between user sessions

SOLUTIONS

1. Robust PDF parsing library with format detection
2. Custom prompt engineering for LLaMA3 model
3. Multi-stage question generation with validation
4. Chunked processing and parallel execution
5. Streamlit session state management



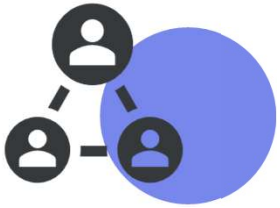
FUTURE DEVELOPMENT

AHMED AMMAR

FUTURE VISION

SHORT-TERM ENHANCEMENTS

- Support for additional file formats (DOCX, EPUB)
- Customizable summary length and quiz difficulty
- Export options for summaries and quizzes



MEDIUM-TERM FEATURES

- Multi-document comparison
- Specialized domains (medical, legal, technical)
- Custom quiz templates

LONG-TERM VISION

- LMS integration
- Collaborative study features
- Mobile application

ACKNOWLEDGMENTS

- **Technologies**

  Streamlit, Ollama, LLaMA 3

- **Libraries**

  PDF processing tools, Requests

- **Contributors**

  This project was developed under the guidance of:

  Eng. Ahmed Ali (Mentor)

- **Open Source**
  - **Available on GitHub for community contributions**

Project Engineers:

- Eng. Ahmed M. Fayad
- Eng. Mohammad Abdelhay
- Eng. Youssef Bedeir
- Eng. Ahmed Ammar
- Eng. Amr Elnashar

THANK YOU