Dushyant Vyas

22162172006_DushyantKVyas_SwiftNotes_Project_Report.docx

Assignment 1

Research_1

Ganpat University

Document Details

Submission ID

trn:oid:::1:3238768135

Submission Date

May 4, 2025, 8:28 PM GMT+5:30

Download Date

May 5, 2025, 8:03 PM GMT+5:30

File Name

Swift_Notes_Report.docx

File Size

308.3 KB

22 Pages

1,678 Words

10,414 Characters

9% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Match Groups

- **13** Not Cited or Quoted 9%
  Matches with neither in-text citation nor quotation marks
- **0** Missing Quotations 0%
  Matches that are still very similar to source material
- **0** Missing Citation 0%
  Matches that have quotation marks, but no in-text citation
- **0** Cited and Quoted 0%
  Matches with in-text citation present, but no quotation marks

Top Sources

- 8% Internet sources
- 2% Publications
- 0% Submitted works (Student Papers)

Match Groups

- **13** Not Cited or Quoted 9%
  Matches with neither in-text citation nor quotation marks
- **0** Missing Quotations 0%
  Matches that are still very similar to source material
- **0** Missing Citation 0%
  Matches that have quotation marks, but no in-text citation
- **0** Cited and Quoted 0%
  Matches with in-text citation present, but no quotation marks

Top Sources

- 8% Internet sources
- 2% Publications
- 0% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	Internet	www.coursehero.com 2%
2	Internet	ohmisskate.com 1%
3	Internet	dokumen.tips <1%
4	Internet	eprints.lancs.ac.uk <1%
5	Publication	Yaohui Wei, Lei Guo, Cheng Lian, Jue Chen. "ChatGPT: Opportunities, Risks and Pri... <1%
6	Internet	irojournals.com <1%
7	Internet	www.techscience.com <1%
8	Internet	technodocbox.com <1%
9	Internet	www.gfi.com <1%
10	Internet	www.nerc.com <1%

11 Internet

arxiv.org <1%

12 Internet

nalnproject.wordpress.com <1%

13 Internet

www.fedex.com <1%

Industry Project Report

On

Swift Notes: AI-Powered Study Notes Generator

Developed By: -

Dushyant K Vyas (22162172006)

Guided By:-

Dr. Pritesh Andharia (Internal)

Mr. Nirav Rajgor (IBM)(External)

Submitted to

Faculty of Engineering and Technology

Institute of Computer Technology

Ganpat University

Year - 2025

CERTIFICATE

This is to certify that the **Industry** Project work entitled **"Swift Notes: AI-Powered Study Notes Generator"** by Dushyant K Vyas (Enrollment No.22162172006) of Ganpat University, towards the partial fulfillment of requirements of the degree of Bachelor of Technology – Computer Science and Engineering, carried out by them in the CSE(CS) Department at Ganpat University. The results/findings contained in this Project have not been submitted in part or full to any other University / Institute for award of any other Degree/Diploma.

Name & Signature of Internal Guide

Name & Signature of Head

Place: ICT - GUNI

Date: 26th April, 2025

ACKNOWLEDGEMENT

The Industry Internship Project has been an invaluable experience, offering a chance for both learning and personal growth. I feel truly privileged to have had the support and guidance of many remarkable individuals throughout this journey. I extend my sincere gratitude to **Prof. Rohit Patel**, Principal of ICT, and **Prof. Dharmesh Darji**, Head of ICT, for granting us the opportunity to undertake this project. I am especially thankful to **Dr. Pritesh Andharia** and **Mr. Nirav Rajgor**, our internal and external mentors, for their insightful guidance during the development of our project *"**Swift Notes: AI-Powered Study Notes Generator**"*. Despite their demanding academic schedules, they consistently found time to guide us and ensure we stayed on the right track. Their mentorship was instrumental to the progress and success of our work. We also acknowledge the constant support of the **Computer Science and Engineering Department**, whose regular monitoring and timely arrangements provided a smooth and encouraging environment for project development. We deeply appreciate all their contributions.

Dushyant K Vyas (Enrollment No: 22162172006)

ABSTRACT

Swift Notes is an AI-powered study notes generator that automates the process of extracting text from PDF documents, summarizing key points, and organizing them into structured study materials. This tool is designed to assist students by reducing manual note-taking efforts and enhancing learning efficiency. Using Google Gemini's multimodal models like Gemini 1.5 Pro or Gemini 2.0 Flash, it provides quick, concise, and exportable study notes for academic and research use.

INDEX

12

CHAPTER: 1
INTRODUCTION

CHAPTER 1
INTRODUCTION

In the fast-paced world of academics, students often face the overwhelming task of **manually summarizing and organizing** large volumes of study materials. Whether preparing for exams, reviewing lecture notes, or analyzing research papers, the process of extracting relevant information and creating structured summaries is **time-consuming and mentally exhausting**. Traditional note-taking methods require hours of reading, comprehension, and manual summarization, leaving students with less time to focus on actual learning.

Students often struggle to manage the massive amount of content they need to study. For example, a student preparing for competitive exams may have to review hundreds of pages of textbooks and research articles. This results in a **significant time investment** and **inconsistent note quality**, making it difficult to retain and revise key concepts efficiently.

In addition, many students rely on **manual processes** to create study notes, which are prone to human error and inefficiency. With the increasing availability of digital resources, there is a growing need for a **smarter, automated** solution that can process large documents and extract **concise, well-structured** information quickly.

Swift Notes is an AI-powered study notes generator designed to automate and streamline the process of creating structured summaries from PDF documents. Swift Notes leverages **Google's Gemini 1.5 Pro**, a cutting-edge large language model (LLM) capable of generating high-quality, concise, and contextually rich summaries. The system extracts meaningful content from uploaded PDFs, intelligently segments the text, and then uses Gemini to produce bullet-point summaries that are accurate, diverse, and easy to read — all within a clean, user-friendly web interface.

10

CHAPTER: 2 PROJECT SCOPE

CHAPTER 2 PROJECT SCOPE

The **Swift Notes** project is designed to address the growing need for automated study material generation by providing an **AI-powered** solution that converts lengthy academic PDFs into concise, well-structured study notes. This project focuses on reducing the time and effort students spend manually summarizing large documents, allowing them to focus on learning and comprehension.

The primary functionality of Swift Notes involves extracting text from PDF documents, processing the extracted content through AI-driven summarization, and delivering user-friendly study notes. Users can upload PDF files through an intuitive web-based interface built using Django. Once uploaded, the system extracts and cleans the text, ensuring that irrelevant content like page numbers, headers, and footers is removed. The cleaned text is then processed by transformer models to generate meaningful summaries, which are formatted into bullet points and section-wise outputs for clarity. This structured presentation allows students to quickly grasp complex topics without reading the entire document.

Swift Notes also provides export capabilities, allowing users to download the generated summaries in both PDF and plain text formats. This feature ensures that students can access their study materials offline or share them easily. The system is optimized to handle large and multi-page documents efficiently by splitting them into manageable sections before summarization.

While the current scope is focused on English-language documents, future iterations of Swift Notes **may** expand to support **multilingual** summarization. The system is not yet designed to handle image-based or scanned PDFs that require **Optical Character Recognition (OCR),** though future improvements could also integrate OCR functionality. Another potential enhancement is **multi-PDF** batch processing, enabling users to summarize multiple documents simultaneously. Furthermore, Swift Notes can be extended to include customization options for adjusting the output's tone, length, and structure, providing a personalized experience for users.

Technically, the project is built using Python as the core programming language. The backend is developed using **Django**, while the summarization process is powered by **Google's Generative AI**. **PyMuPDF** is used for PDF parsing and extraction, and the export feature is implemented using **ReportLab**. The system is designed for deployment on cloud platforms like Render or Heroku, allowing public access and scalability.

13

CHAPTER: 3 SOFTWARE AND HARDWARE REQUIREMENTS

CHAPTER 3 SOFTWARE AND HARDWARE REQUIREMENTS

Minimum Hardware Requirements

Processor	2.0 GHz
RAM	4GB
HDD	4GB

Table 3.1 Minimum Hardware Requirements

Minimum Software Requirements

Operating System	Windows/Linux/MacOS (with Python support)
Programming language	Python 3.10+
Other tools & tech	Internet browser

Table 3.2 Minimum Software Requirements

CHAPTER: 4 PROCESS MODEL

CHAPTER 4 PROCESS MODEL

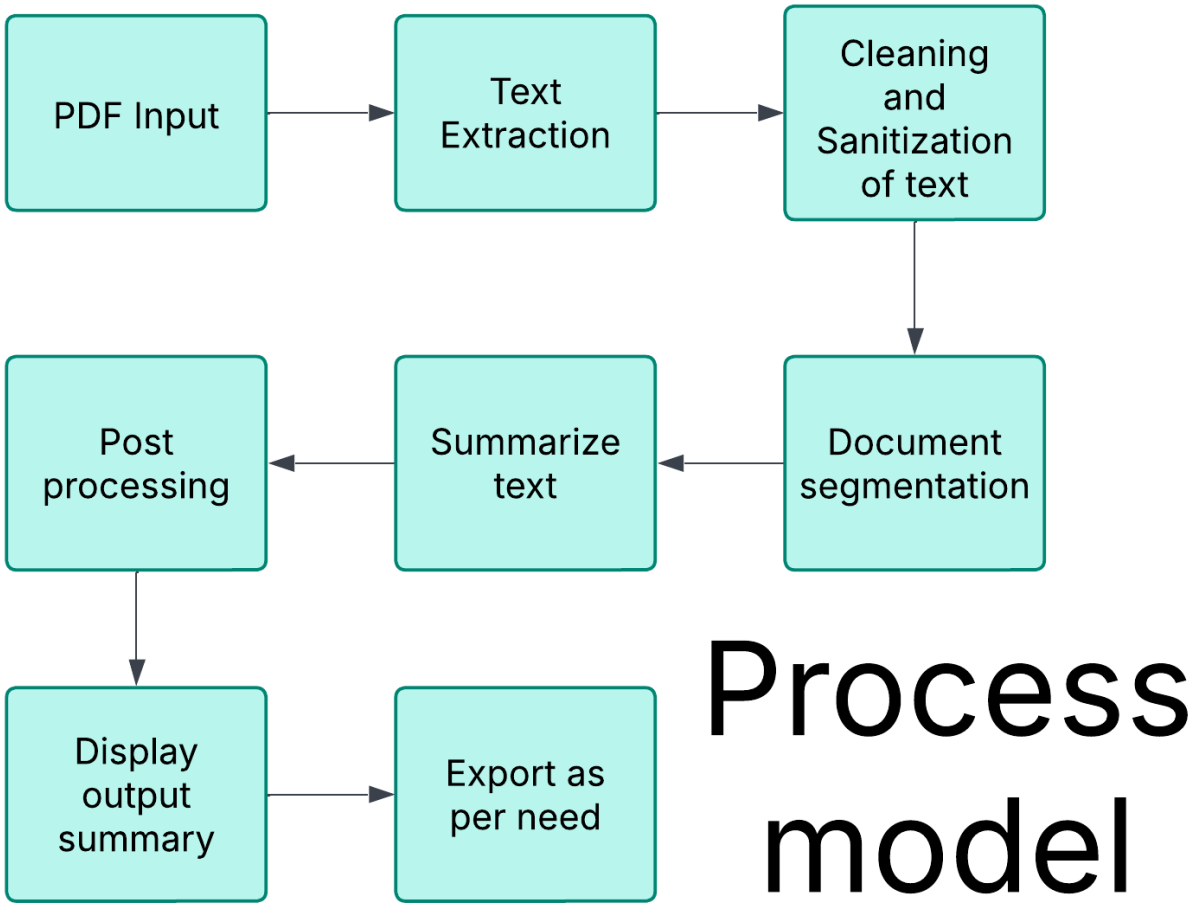

Figure 4.1 Process Model of Project

CHAPTER: 5 PROJECT PLAN

CHAPTER 5 PROJECT PLAN

5.1 Timeline

Week 1: PDF Processing and Extraction
Week 2: Implementing AI Summarization
Week 3: Testing Robustness
Week 4: Optimizing
Week 5: Deployment

Web – App : Progressive

CHAPTER: 6 IMPLEMENTATION DETAILS

CHAPTER 6 IMPLEMENTATION DETAIL

6.1 Flowchart of Implementation

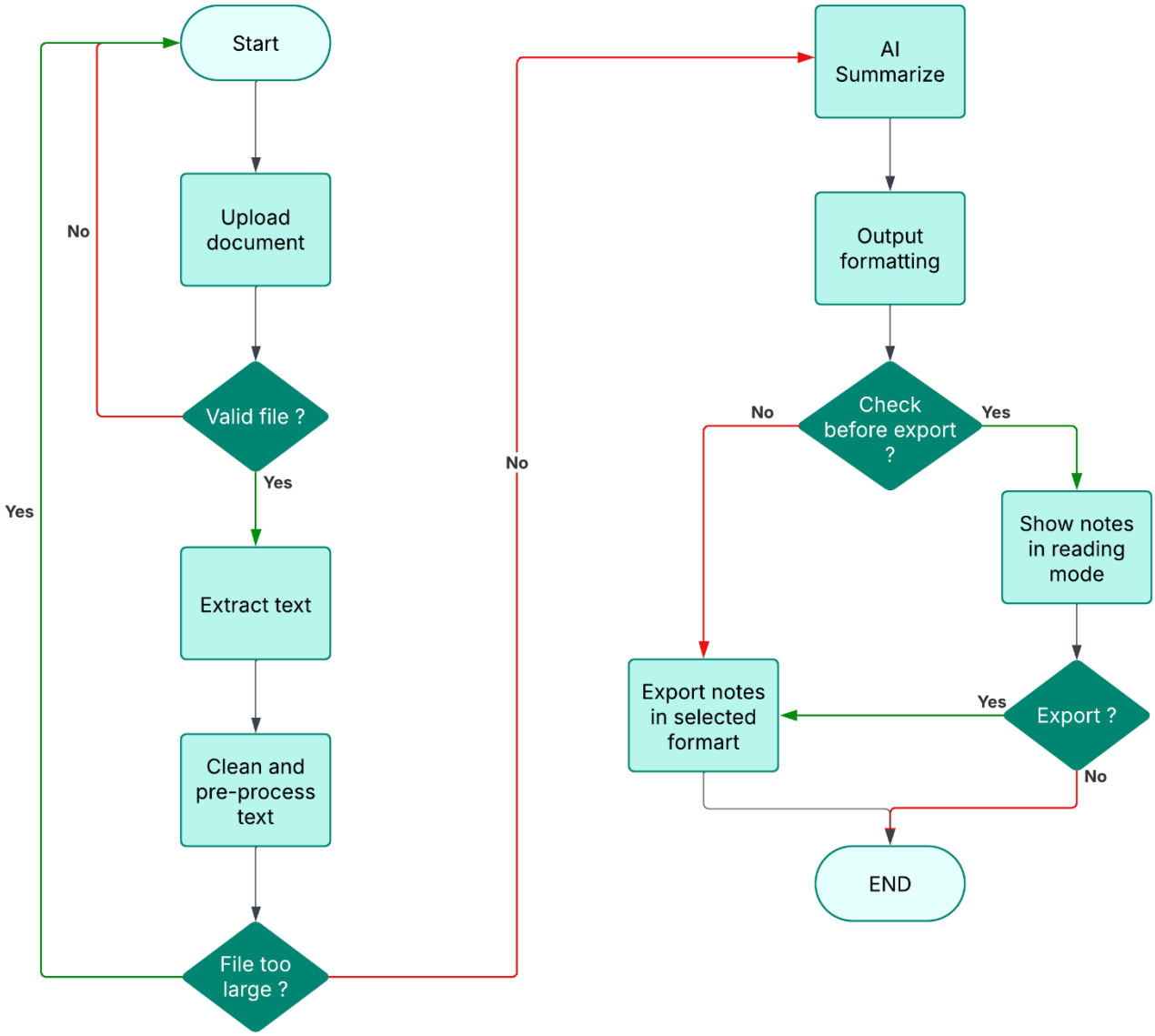

Figure 6.1 Project Implementation Flowchart

4

CHAPTER: 7 CONCLUSION AND FUTURE WORK

CHAPTER 7 CONCLUSION AND FUTURE WORK

Conclusion

The **Swift Notes** project aims to implement **AI-power** that automates the extraction, summarization, and presentation of academic content from PDF documents. The project addresses a crucial problem faced by students—**manually summarizing large volumes of study materials**—by providing a fast, accurate, and user-friendly solution. Through the use of advanced Large Language Models (LLMs) like **Google Gemini 1.5 Pro**, the system delivers well-structured, accurate, and topic-diverse study notes that enhance learning efficiency and significantly reduce the time required for manual summarization.

The project is executed through a well-defined process that involves **PDF extraction**, **AI summarization**, **output formatting**, and **exporting** the summarized content. Users interact with the system through a **Django-based web interface**, where they can upload PDF documents, review the generated summaries, and export them to **PDF** or **plain text** formats. This simple yet robust process ensures that students can quickly and effectively generate study materials without spending hours manually compiling notes.

The **performance** of the system is enhanced by leveraging **GPU acceleration** where available. This optimization reduces the time required for processing, making the system responsive and capable of handling multiple documents. Furthermore, by utilizing **Google's pre-hosted Gemini 1.5 Pro API**, the system provides state-of-the-art summarization capabilities without the need for local model training or heavy computational resources, ensuring both scalability and ease of integration.

The **user experience** is also a focal point of Swift Notes. The web interface is designed to be **intuitive and accessible**, enabling users to navigate seamlessly between uploading documents, viewing summaries, and downloading notes. Additional features such as **text cleaning**, **formatting**, and **export options** contribute to a comprehensive solution that meets the diverse needs of students and academic professionals.

Future work

While **Swift Notes** aims at achieving its primary goal of providing automated, high-quality study notes; there are several areas for future enhancement and development:

1. **Multilingual Support**: Extend the system's capabilities to summarize documents in multiple languages beyond English.
2. **OCR Integration**: Implement **Optical Character Recognition (OCR)** to process scanned PDFs and image-based documents (hand-written notes).
3. **Interactive Summarization**: Allow users to interact with and refine summaries by adjusting tone and length.
4. **Batch PDF Processing**: Enable users to upload and summarize **multiple PDFs** simultaneously for greater convenience.
5. **Advanced Customization**: Provide more user control over the summarization process, including options for section-specific summaries and keyword-based extraction.
6. **Improved User Interface**: Enhance the user experience with features like **dark mode**, **search functionality**, and **summary previews**.
7. **Mobile Compatibility**: Optimize the interface for better accessibility and usability on mobile devices.

CHAPTER: 8 REFERENCES

CHAPTER 8 REFERENCES

- **Google Gemini API Documentation** – For implementing the Gemini 1.5 Pro model to perform high-quality AI-powered summarization :- https://ai.google.dev

- **PyMuPDF (fitz) Documentation** – For extracting and processing text content from PDF documents :- https://pymupdf.readthedocs.io/

- **Django Documentation** – For creating the web framework, managing user authentication, routing, and UI rendering :- https://docs.djangoproject.com/

- **ReportLab Documentation** – For generating downloadable PDF files from the summarized content :- https://www.reportlab.com/docs/

- **OpenAI (ChatGPT)** – Support in conceptualizing project features, refining documentation, and enhancing summarization workflows :- https://openai.com

- **Python Official Documentation** – Core reference for implementation using Python libraries and third-party modules :- https://docs.python.org/

- **Render / Heroku Docs** – For optional cloud deployment and web hosting services :- https://render.com/docs, https://devcenter.heroku.com/