National University
of computer and emerging sciences

INTELLECT SLIDE

Transforming Lectures
Engage, Navigate, Transcribe!
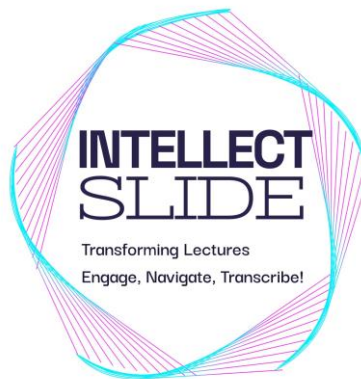
FYP1 Mid Evaluation Report

FYP Team

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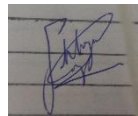
Dr. Uzair Iqbal

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Title: ***Intellect Slide***

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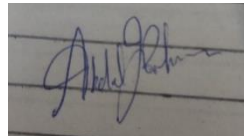
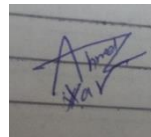Date: 15th October 2023

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Authors' Declaration

This states the Authors' declaration that the work presented in the report is their own and has not been submitted/presented previously to any other institution or organization.

Executive Summary

The FYP 1 Mid Evaluation Report presents the progress and objectives of the project titled "Intellect Slide", which aims to develop a cutting-edge lecture augmentation system for classrooms. The system utilizes advanced technologies such as speech recognition, natural language processing, and emphasis detection to enhance the learning experience and transform traditional teaching techniques.

The project focuses on addressing the challenges faced in conventional classroom teaching, including reduced engagement, comprehension, and the lack of visual signals to identify important information. By seamlessly integrating speech recognition and text analysis, the system converts spoken words into text and analyses presentation slides to identify key points and figures. This provides students with a visual reference to critical content and improves note-taking efficiency.

Moreover, the project introduces emphasis detection, which uses tone and context analysis to identify, and tag emphasized portions of the teacher's speech directly on the slides. This feature enhances educators' ability to deliver engaging presentations and facilitates easy movement through the slides.

The primary objective of the project is to create a transformative learning environment where emphasis detection, synchronized material, and figure highlighting work together seamlessly in real-time. This initiative aims to improve teaching effectiveness, student engagement, and the overall efficiency of classroom teaching.

The project scope includes the development of the lecture augmentation system, comprising modules for speech recognition, text analysis, and emphasis detection. Integration of these technologies into the classroom environment and ensuring real-time functionality during lectures are key considerations.

The project faces various constraints, including budget limitations, latency constraints, technological challenges, and compatibility with existing classroom infrastructure. Data privacy and security are also crucial factors to be addressed.

The stakeholders of the project include educators/instructors, students, educational institutions, the development team, and regulatory authorities. Each stakeholder group has specific goals and problems they aim to address through the implementation of the lecture augmentation system.

The software requirements of the project are outlined, covering features such as speech-to-text conversion, slide content extraction and parsing, text analysis and emphasis detection, user interface and presentation display, figure identification and highlighting, and real-time integration and performance.

Functional requirements related to speech-to-text conversion, text analysis, slide content extraction, dynamic highlighting, figure identification, user interface, and emphasis analytics are detailed. Additionally, quality attributes such as maintainability, scalability, testability, compliance, and non-functional requirements including usability, performance, security, compatibility, and reliability are considered.

The report also includes an iteration plan, use case diagram, high-level use case, system sequence diagrams, domain model, activity diagram, structure chart, wireframes, implementation details, user manual, references, and appendices for comprehensive documentation.

In conclusion, the "Intellect Slide" project aims to revolutionize classroom teaching by leveraging advanced technologies to create an immersive and dynamic learning experience. By providing real-time emphasis detection, synchronized material, and figure highlighting, the system enhances teaching effectiveness, student engagement, and overall learning outcomes.

Contents

Introduction

Our project aims to develop a cutting-edge lecture augmentation system for classrooms that will transform conventional teaching techniques. Our system offers an immersive and dynamic learning experience by seamlessly integrating cutting-edge technologies including speech recognition, natural language processing, and emphasis detection.

Using advanced voice recognition technology, our system can convert spoken words into text. It can also analyse material to find important information on presentation slides. Our system automatically highlights key points and figures as teachers explain them by analysing PowerPoint files. This provides students with a visual reference to critical content.

Additionally, we introduce emphasis detection which uses tone and context analysis to identify and tag emphasised portions of the teacher's speech right on the slides and enable educators to move presentations with ease.

The goal of our project is to make sure that all of these elements work together seamlessly in real time to provide a transformative learning environment that includes emphasis detection, synchronised material, and figure highlighting. With the help of this innovative initiative, instructors and students will be able to participate in lively and interactive lectures, which will improve learning and make education more dynamic and efficient.

Project Vision

Problem Statement

The dynamic engagement and interactive components needed to achieve the high learning expectations of today's students have been missing from traditional classroom teaching approaches. Reduced engagement and comprehension are the result of a lack of adequate visual signals, information summary, and the capacity to quickly recognize and concentrate on lecture stressed points.

Business Opportunity

An inventive lecture augmentation system has a large commercial potential to solve these classroom issues. This technology might serve people looking for a more productive and immersive learning experience as well as educational institutions and professional training organisations. This project has the potential to capitalise on the burgeoning market for cutting-edge educational technology solutions.

Objectives

The main objectives of our project are discussed below.

- Provide a speech recognition, natural language processing, and emphasis detection-based lecture augmentation system.
- Transcribing audible words into text can improve taking notes.
- Examine presentation slides to identify important details.
- Put real-time emphasis detection into practice.
- Establish a learning atmosphere that will alter both teachers and students.
- Improve the efficiency and effectiveness of classroom teaching.

Project Scope

The project scope encompasses the development of the lecture augmentation system, including speech recognition, text analysis, and emphasis detection modules. It covers the integration of these technologies into the classroom environment and ensuring they work seamlessly in real-time during lectures.

Constraints

Key constraints of the project may include budget limitations, latency constraints, technological challenges, and the need for compatibility with existing classroom infrastructure. Additionally, ensuring data privacy and security are essential constraints to consider.

Stakeholders Description

Stakeholders Summary

- **Educators/Instructors**: The system's primary users, who utilise it to improve their instruction and deliver lectures.
- **Students**: End users who benefit from the system to improve their learning experience.
- **Educational Institutions**: Implementing the system in their classrooms and influencing its adoption.
- **Development Team**: Responsible for designing, developing, and maintaining the system.
- **Regulatory Authorities**: Ensuring compliance with educational and data privacy regulations.

Key High-Level Goals and Problems of Stakeholders

- **Educators/Instructors:** Improve teaching effectiveness, engage students, and enhance classroom dynamics.
- **Students:** Enhance learning, understanding, and retention of course material.
- **Educational Institutions:** Improve the quality of education, attract students, and maintain competitiveness.
- **Development Team:** Develop a reliable, efficient, and user-friendly system.
- **Regulatory Authorities:** Ensure compliance with educational and data protection regulations while promoting innovation in education.

Software Requirement Specifications

List of Features

Speech-to-Text Conversion:

- Convert teacher's spoken words into written text in real-time.
- Utilise advanced speech recognition technology for accurate transcription.

Slide Content Extraction and Parsing:

- Extract textual content, bullet points, and figures from PowerPoint slides (pptx).
- Parse the XML content of slides to identify figure elements.

Text Analysis and Emphasis Detection:

- Apply natural language processing techniques to analyse the teacher's speech.
- Detects points where emphasis is placed through tone and context analysis.
- Dynamically highlight relevant text and bullet points as the teacher speaks.

User Interface and Presentation Display:

- Design an intuitive user interface.
- Display synchronised slides with real-time text highlighting and figure identification.

Figure Identification and Highlighting:

- Detects figures (images, diagrams) from parsed slide content.
- Highlight relevant figures as the teacher references them.
-

Real-time Integration and Performance:

- Ensure seamless integration of speech-to-text, text analysis, and voice recognition.
- Optimise system performance to deliver real-time responsiveness.

Documentation, Reporting:

- Document the design, implementation, and functionality of each module.
- Prepare a comprehensive report and presentation for project documentation.

Testing and Feedback Collection:

- Conduct thorough testing to ensure accurate text recognition and emphasis detection.
- Collect user feedback to refine and improve the system's usability.

Functional Requirements

Speech-to-Text Conversion and Emphasis Detection.

- The system should transcribe the teacher's spoken words into text in real-time.
- The system should analyse the tone and context of speech to detect emphasised portions.
- Detected emphasis points should be tagged for further processing.

Text Analysis and Content Relevance:

- The system should process the transcribed text to identify keywords and relevant phrases.
- It should match identified keywords with the content of the presentation slides.
- Identified relevant content should be dynamically highlighted on the slides during the lecture.

Slide Content Extraction and Parsing:

- The system should parse PowerPoint (pptx) files to extract textual content and figures.
- It should accurately locate text, bullet points, and figure elements within each slide.

Dynamic Highlighting and Emphasis Tagging:

- Relevant text and bullet points should be highlighted on the slides as the teacher speaks.
- Emphasised portions of the transcribed text should be highlighted differently.
- The system should ensure synchronisation between speech, highlighting, and emphasis.

Figure Identification and Highlighting:

- The system should identify figures (images, diagrams) within the slides' XML content.
- Detected figures should be highlighted as the teacher refers to them.

User Interface and Real-time Presentation:

- The user interface should display synchronised slides with highlighted content.
- Changes in highlighting and emphasis should be reflected in real-time.
- The interface should be intuitive and user-friendly for both teachers and students.

Emphasis Analytics and Reporting:

- The system should record and store data about emphasised points throughout the lecture.
- Analytics should generate reports or summaries of emphasised content for review.

Quality Attributes

Maintainability:

- **Modularity**: The software should be designed with modular components that can be easily maintained and upgraded.

- **Documentation**: Adequate documentation should be provided for code, APIs, and system configurations.
- **Version Control**: Code and configurations should be version-controlled to track changes and facilitate maintenance.

Scalability:

- **Vertical Scaling**: The software should support scaling by adding more resources to a single component.
- **Horizontal Scaling**: It should also support scaling by adding more instances of components to distribute the load.
- **Load Balancing**: Load balancing mechanisms should be in place to evenly distribute incoming requests.

Testability:

- **Test Coverage**: The software should have comprehensive test coverage to ensure that all functions are thoroughly tested.
- **Test Data**: Adequate test data should be available for unit testing, integration testing, and user testing.
- **Error Reporting**: The system should log and report errors and issues to facilitate debugging.

Compliance:

- **Regulatory Compliance**: The software should comply with legal and industry-specific regulations.
- **Standards Compliance**: It should adhere to relevant coding and architectural standards.
- **Documentation Compliance**: Documentation should conform to organisational and industry standards.

Recovery and Backup:

- **Data Backup**: The software should have mechanisms for data backup and recovery in case of data loss.
- **Disaster Recovery**: In case of a catastrophic failure, there should be disaster recovery plans in place.

Non-Functional Requirements

Usability:

- **Usability Requirements**: The system should provide an intuitive user interface that is easy to learn and use.
- **Efficiency**: Users should be able to quickly navigate through slides and access relevant content without delays.
- **Error Handling**: In case of errors or disruptions, the system should provide clear error messages and recovery options.
- **Accessibility**: The user interface should be designed to ensure accessibility for users with disabilities.

Performance:

- **Real-time Processing**: The system should process speech-to-text conversion, text analysis, and recognition in real-time, minimising latency.
- **Slide Transition Speed**: Slide transitions triggered by voice should be smooth and quick to maintain the flow of the lecture.

Security:

- **Data Protection**: User data, including speech transcriptions, should be securely stored and encrypted to prevent unauthorised access.
- **Access Control**: Access to administrative features, such as configuration settings, should be restricted to authorised users.
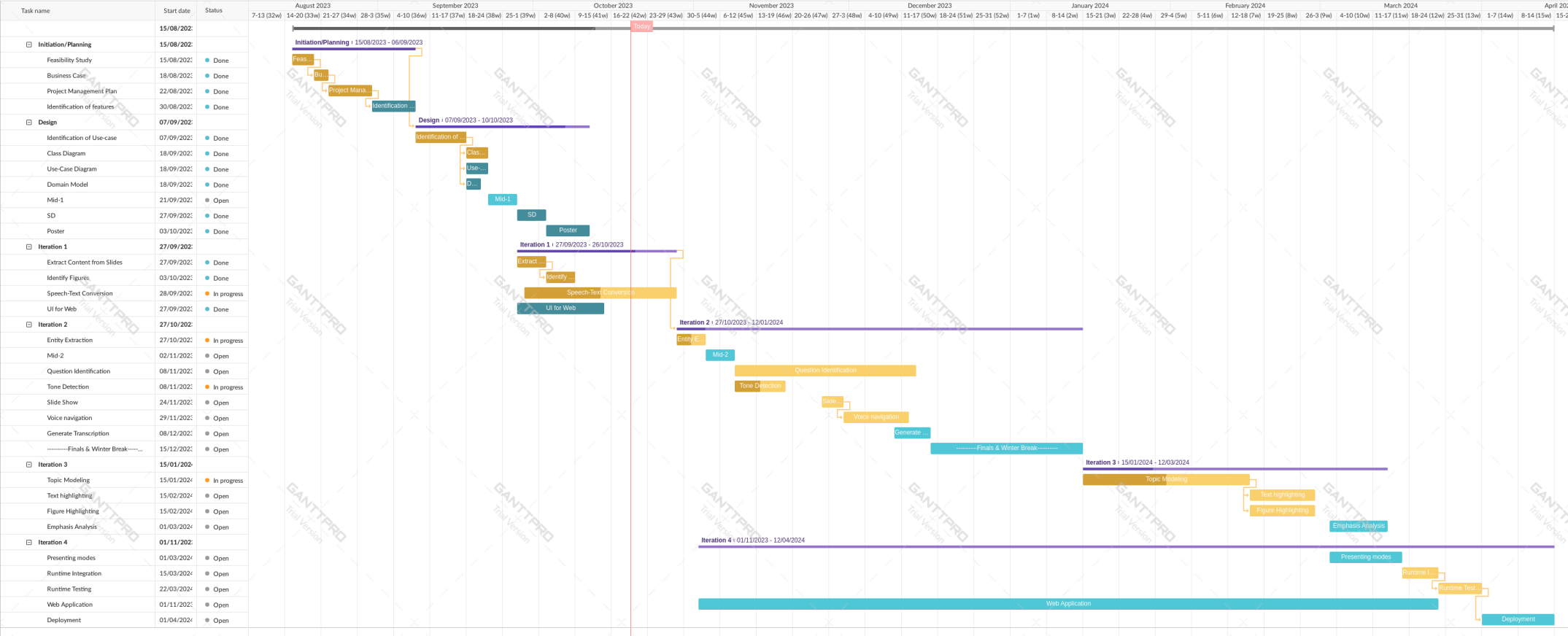
Compatibility:

- **Device Compatibility**: The system's user interface should be compatible with various devices, including desktops, laptops, and tablets.

Reliability:

- **Stability**: The system should be stable and able to handle unexpected scenarios without crashing.
- **Redundancy**: In case of system failures, the system should have backup mechanisms to ensure continuous lecture flow.

Software Development Plan

My Team | **FYP-Intellect Slide**

Task name	Start date	Status
	15/08/2023	
Initiation/Planning	15/08/2023	
Feasibility Study	15/08/2023	Done
Business Case	18/08/2023	Done
Project Management Plan	22/08/2023	Done
Identification of features	30/08/2023	Done
Design	07/09/2023	
Identification of Use-case	07/09/2023	Done
Class Diagram	18/09/2023	Done
Use-Case Diagram	18/09/2023	Done
Domain Model	18/09/2023	Done
Mid-1	21/09/2023	Open
SD	27/09/2023	Done
Poster	03/10/2023	Done
Iteration 1	27/09/2023	
Extract Content from Slides	27/09/2023	Done
Identify Figures	03/10/2023	Done
Speech-Text Conversion	28/09/2023	In progress
UI for Web	27/09/2023	Done
Iteration 2	27/10/2023	
Entity Extraction	27/10/2023	In progress
Mid-2	02/11/2023	Open
Question Identification	08/11/2023	Open
Tone Detection	08/11/2023	In progress
Slide Show	24/11/2023	Open
Voice navigation	29/11/2023	Open
Generate Transcription	08/12/2023	Open
----------Finals & Winter Break----...	15/12/2023	Open
Iteration 3	15/01/2024	
Topic Modeling	15/01/2024	In progress
Text highlighting	15/02/2024	Open
Figure Highlighting	15/02/2024	Open
Emphasis Analysis	01/03/2024	Open
Iteration 4	01/11/2023	
Presenting modes	01/03/2024	Open
Runtime Integration	15/03/2024	Open
Runtime Testing	22/03/2024	Open
Web Application	01/11/2023	Open
Deployment	01/04/2024	Open

Comparison with existing technologies

Study Fetch is an AI-powered educational tool that allows students to upload various learning materials such as YouTube videos, PDFs, and PowerPoint presentations. It automatically generates study notes and test questions based on the content, making it a versatile and efficient resource for personalized learning.

Fireflies.ai is an AI-powered transcription and meeting recording tool. It is designed to assist with notetaking and capturing key insights during meetings. Fireflies.ai uses speech recognition technology to transcribe spoken words into text, making it easier for users to review and search for specific information discussed in meetings.

Comparison

1. Intellect Slide

  - Focus: Assisting presenters during live presentations.

  - Main Features: Real-time text highlighting, figure detection, voice-controlled slide navigation, emphasis detection, question generation, and transcription.

  - Target Users: Presenters and educators conducting live presentations.

2. Study Fetch

  - Focus: Supporting students in their learning process.

  - Main Features: Content upload (YouTube videos, PDFs, PowerPoint presentations), automatic generation of study notes and test questions.

  - Target Users: Students looking to create study materials and prepare for exams or assignments.

 (Study Fetch AI, n.d.)

3. Fireflies.ai

  - Focus: Improving meeting efficiency and note-taking.

  - Main Features: Speech recognition for transcribing spoken words into text, meeting recording, and organization of meeting insights.

  - Target Users: Professionals and teams looking to enhance their productivity during meetings and discussions.

(FireFlies, n.d.)

	Speech recognition	Content extraction	Transcription	
Intellect Slide				
Study Fetch				
Fireflies.ai				

Key differences and similarities:

- **Purpose**: Intellect Slide focuses on real-time assistance during live presentations, while Study Fetch and Fireflies.ai are designed for educational content creation and meeting efficiency, respectively.

- **Users**: Intellect Slide targets presenters and educators, Study Fetch targets students, and Fireflies.ai targets professionals and teams.

- **Features**: Intellect Slide integrates various features for live presentations, including figure detection and question generation. Study Fetch focuses on content generation and test questions. Fireflies.ai focuses on transcription and meeting organization.

- **Content Types:** Study Fetch and Fireflies.ai deal with a broader range of content types (videos, PDFs, presentations, spoken language), while Intellect Slide mainly concentrates on live presentations.

- **Timing:** Intellect Slide focuses on real-time interaction, while Study Fetch and Fireflies.ai can work with pre-recorded content (videos, PDFs, recorded meetings).

Use Case Diagram
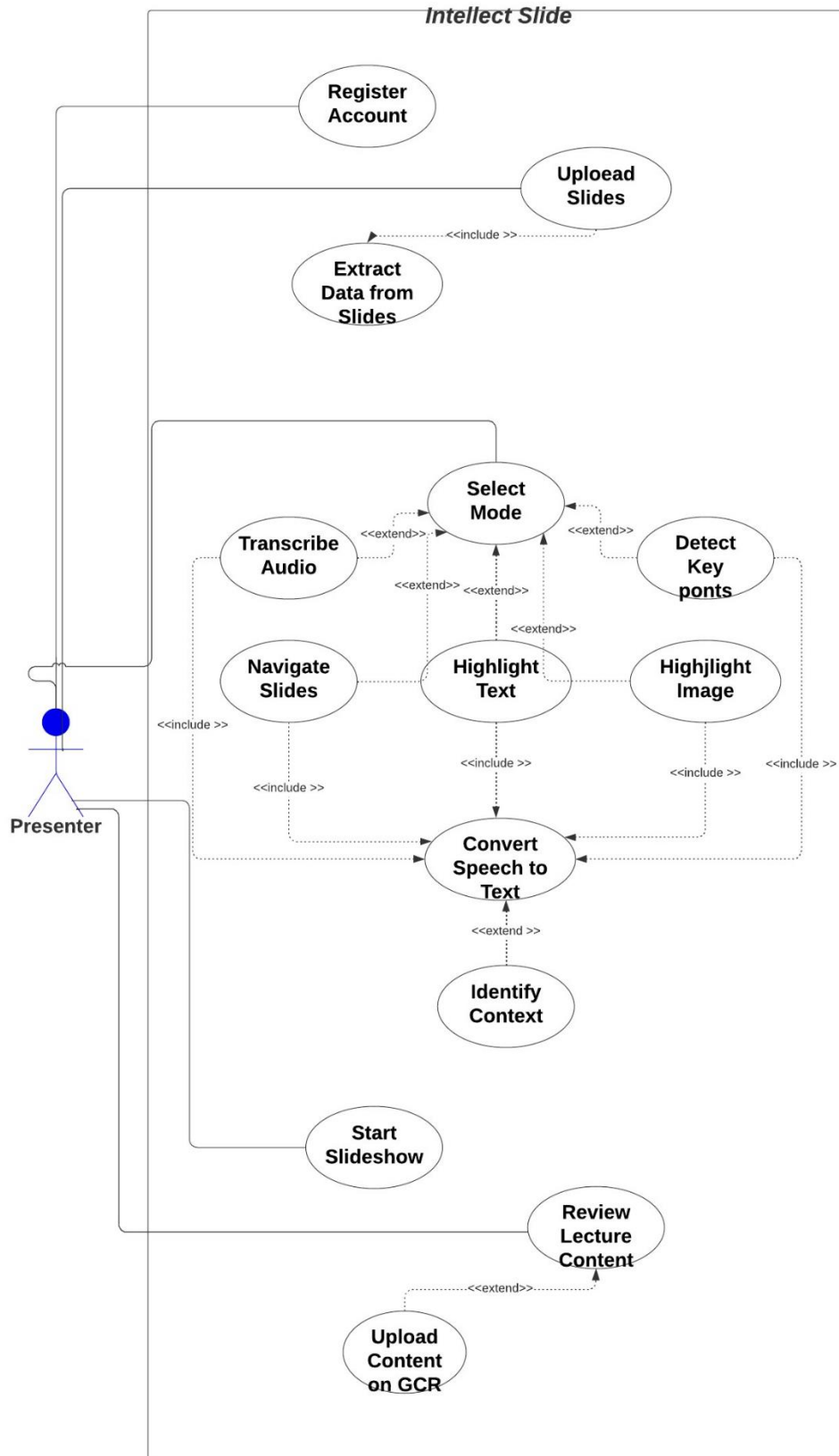
High Level Use Case

No.	Use Case	Actor	Description
1	Upload Slides	Presenter	The presenter uploads presentation slides in .pptx format.
2	Extract Data from Slides	System	The system processes the uploaded slides, extracting necessary information such as text and images for further use.
3	Select Mode	Presenter	The presenter can choose from different modes of operation, enabling or disabling specific features as needed.
4	Start Slideshow	Presenter	The presenter initiates the presentation of the slides to begin the lecture.
5	Transcribe Audio	System	The system converts spoken words during the lecture into text, creating real-time transcripts.
6	Highlight Text	System	The system uses Natural Language Processing (NLP) to analyse and highlight relevant text based on the presenter's speech.
7	Upload Content on GCR (Google Classroom)	System	After the lecture, the system uploads the transcribed content and emphasized key points to Google Classroom for students to access.
8	Highlight Image	System	The system detects cues from the presenter and highlights relevant images on the presentation slides.
9	Detect Key Point	System	The system identifies and collects significant information and key points as the presenter discusses them during the lecture.
10	Register Account	Presenter	The presenter can create an account, providing the necessary information for system access.
11	Navigate Slides	Presenter	The presenter can use audio commands to navigate through the presentation slides during the lecture.
12	Review Lecture Content	Presenter	The presenter reviews the transcribed text and emphasized key points before uploading the content to Google Classroom.
13	Convert Speech to Text	System	The system converts the presenter's spoken words into written text during the lecture.
14	Identify Context	System	The system analyzes the context of the lecture content, helping to identify and emphasize relevant information.

Expanded Use Case

Use Case Number	1
Use Case Name	Register Account
Scope	Intellect Slide
Level	User Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is not registered in the system.
Success Guarantee	Presenter successfully registers an account.
Main Success Scenario:	
<u>Actor Actions</u>	<u>System Response</u>
1. Presenter initiates the registration process.	
	2. System provides a registration form.
3. Presenter fills in the required registration details.	
	4. System validates the provided information.
5. Presenter submits the registration form.	
	6. System creates an account for the Presenter.
	7. System informs the Presenter that the registration was successful.

Use Case Number	2
Use Case Name	Upload Slides
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is logged into the system.

Success Guarantee	Presenter successfully uploads presentation slides.
Main Success Scenario	
<u>Actor Actions</u>	<u>System Response</u>
1. Presenter selects slides for upload.	
	2. The system provides the upload interface.
3. Presenter uploads selected slides.	.
	4. The system processes and stores the uploaded slides
	5. The system confirms successful slide upload.

Use Case Number	3
Use Case Name	Extract Data from Slides
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is logged into the system.
Success Guarantee	Data from slides is successfully extracted.
Main Success Scenario	
<u>Actor Actions</u>	<u>System Response</u>
1. Presenter uploads a slide	
	2. The system extracts text and images from the selected slide.
	3. Data is available for further processing

Use Case Number	4
Use Case Name	Start Slideshow
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System

Precondition	Presenter is logged into the system and presentation slides are uploaded.
Success Guarantee	Slideshow is successfully initiated.
Main Success Scenario	
Actor Actions	System Response
1. Presenter selects the presentation slides for the slideshow.	
	2. The system prepares the slideshow.
3. Presenter initiates the slideshow.	
	4. The system starts the slideshow.

Use Case Number	5
Use Case Name	Select Mode
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is logged into the system, slide is uploaded, and slideshow is started.
Success Guarantee	Presentation mode is successfully selected.
Main Success Scenario	
Actor Actions	System Response
1. Presenter start the slideshow.	
	2. The system provides a mode selection interface.
3. Presenter selects the desired presentation mode.	
	4. The system confirms the selected mode.

Use Case Number	6
Use Case Name	Transcribe Audio
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is giving a live presentation.
Success Guarantee	Audio content is successfully transcribed.
Main Success Scenario	
Actor Actions	System Response
1. Presenter initiates the audio transcription process.	
	2. The system activates audio-to-text transcription.
3. Presenter delivers the presentation with speech.	
	4. The system provides the converted text at the end of presentation.

Use Case Number	7
Use Case Name	Highlight Text
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is giving a live presentation with slides.
Success Guarantee	Relevant text is successfully highlighted.
Main Success Scenario	
Actor Actions	System Response
1. Presenter selects the "highlight text" feature.	
2. Presenter continues with the presentation.	
	3. The system matches teacher's speech with corresponding text on the slides.

	4. The system highlights the relevant text.

Use Case Number	8
Use Case Name	Highlight Image
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is giving a live presentation with slides.
Success Guarantee	Relevant image is successfully highlighted.
Main Success Scenario	
Actor Actions	System Response
1. Presenter selects the "highlight image" feature.	
2. Presenter refers to an image on the presentation slides.	
	3. The system identifies the image being referred to.
	4. The system highlights the image.

Use Case Number	9
Use Case Name	Detect Key Point
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is giving a live presentation with slides.
Success Guarantee	Key points in the presentation are successfully detected.
Main Success Scenario	
Actor Actions	System Response

1. Presenter selects the "Detect Key Points" feature.	
2. Presenter discusses key points in the presentation.	
	3. The system analyzes and identifies the key points.
	4. The system displays the key points at the end of presentation

Use Case Number	10
Use Case Name	Navigate Slides
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is giving a live presentation with slides.
Success Guarantee	Slide navigation is successfully controlled.
Main Success Scenario	
<u>Actor Actions</u>	<u>System Response</u>
1. Presenter initiates slide navigation commands.	
	2. The system interprets the navigation commands.
3. Presenter instructs the system to navigate to specific slides.	
	4. The system advances or moves to the designated slides as per the instructions.

Use Case Number	11
Use Case Name	Convert Speech to Text
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter

Stakeholders	Presenter, System
Precondition	Presenter is delivering a live presentation with audio content.
Success Guarantee	Spoken words are successfully transcribed into text.
Main Success Scenario	
Actor Actions	System Response
1. Presenter selects a feature which requires conversion of speech to text	
	2. The system activates speech recognition and transcription.
3. Presenter delivers spoken content during the presentation.	
	4. The system transcribes the spoken words into text in real-time.

Use Case Number	12
Use Case Name	Identify Context
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter is giving a live presentation with slides.
Success Guarantee	Context of the presentation is successfully identified.
Main Success Scenario	
Actor Actions	System Response
1. Presenter selects a feature which requires identification of context.	
	2. The system analyzes and identifies the context of the presentation.
	4. The extracted information is available for other functionalities.

Use Case Number	13
Use Case Name	Review Lecture Content
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter wants to review and edit transcribed text and key points.
Success Guarantee	Presenter successfully reviews and edits the lecture content.
Main Success Scenario	
Actor Actions	System Response
1. Presenter ends the presentation.	
	2. The system provides access to the lecture transcript and key points.
3. Presenter reviews and edits the content as needed.	
	4. The system saves and updates the lecture content.

Use Case Number	14
Use Case Name	Upload Content on GCR
Scope	Intellect Slide
Level	Presenter Level
Primary Actor	Presenter
Stakeholders	Presenter, System
Precondition	Presenter wants to share lecture materials with students.
Success Guarantee	Lecture content is successfully uploaded to Google Classroom.
Main Success Scenario	
Actor Actions	System Response

1. Presenter selects the option to automatically upload content to GCR.	
	2. The system connects to Google Classroom for uploading.
	3. The system provides an interface to user regarding what is going to be uploaded.
4. Presenter prompts to upload.	
	5. The system ensures successful upload to the Google Classroom platform.

Iteration 2

System Sequence Diagrams

Upload Slides:
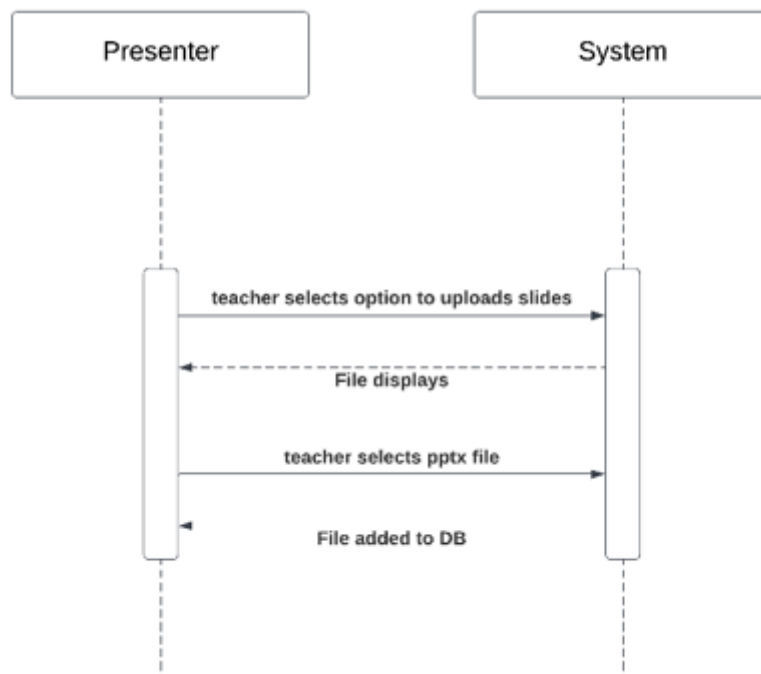
Start Slideshow:
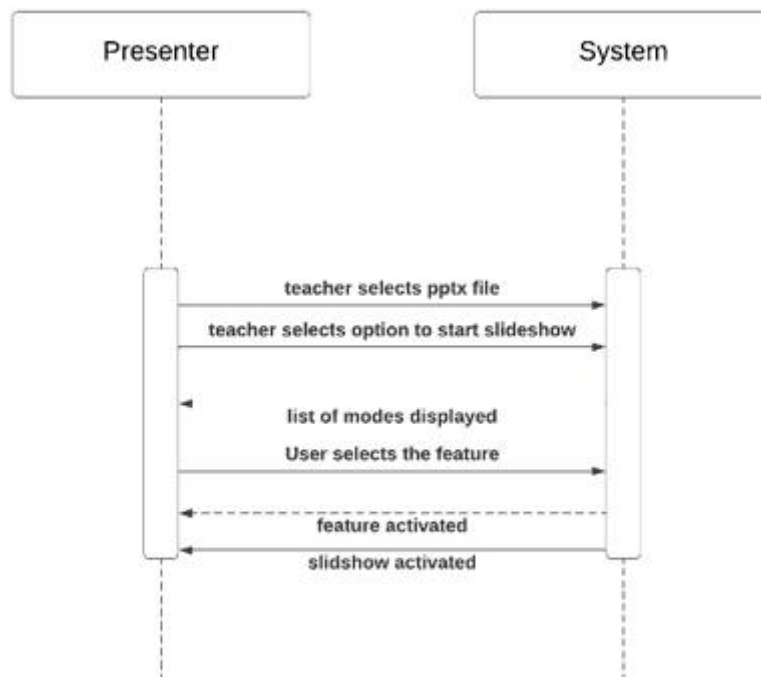
Highlight Image:
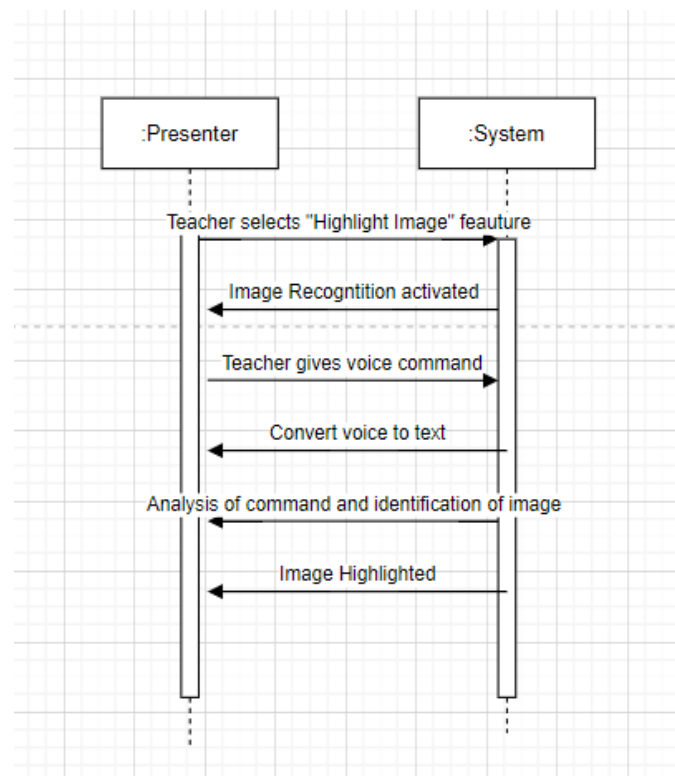
Domain Model
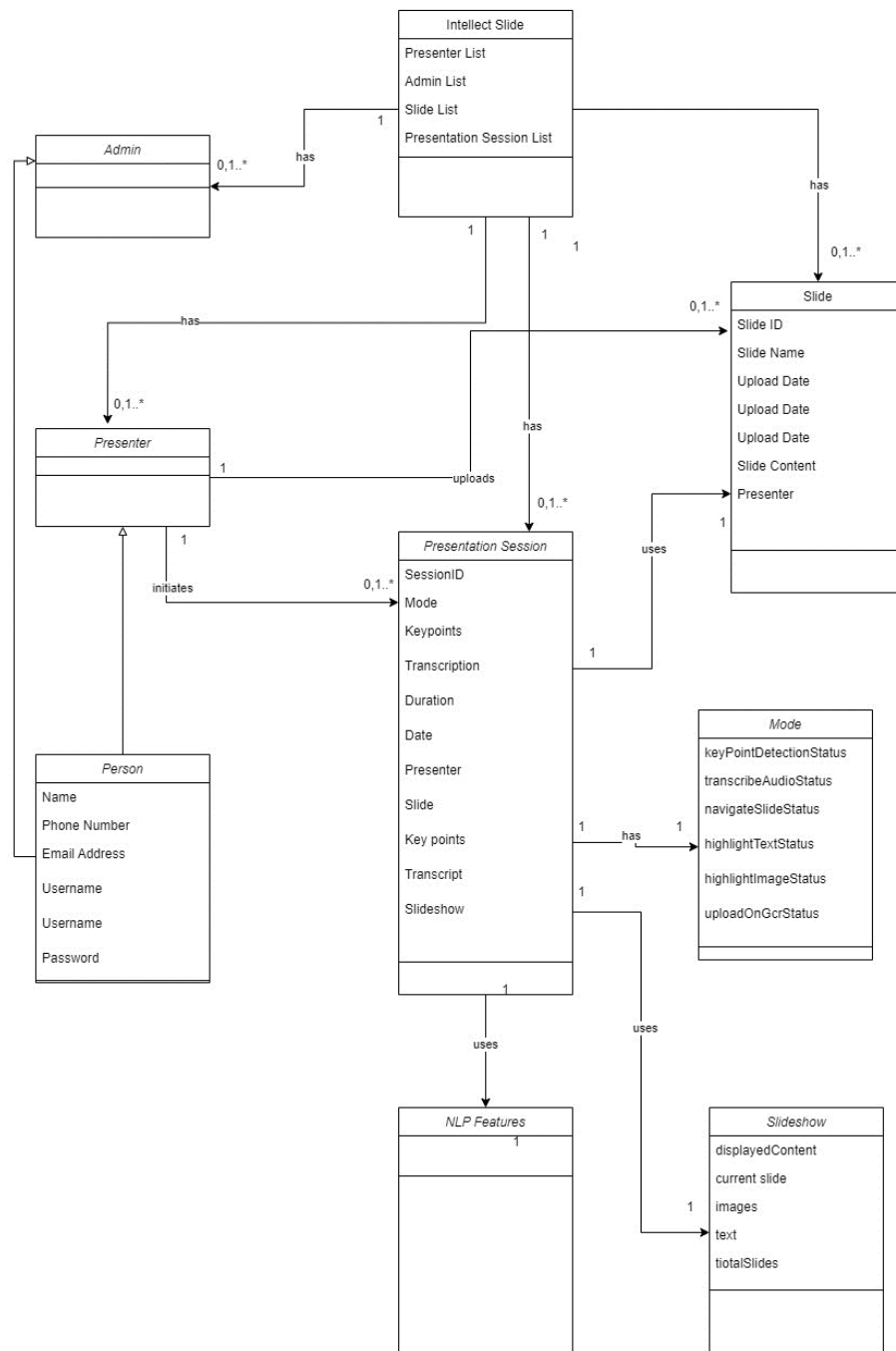
Activity Diagram

We had designed the activity diagram for each feature separately. All of them are designed and discussed below.

Upload Slides
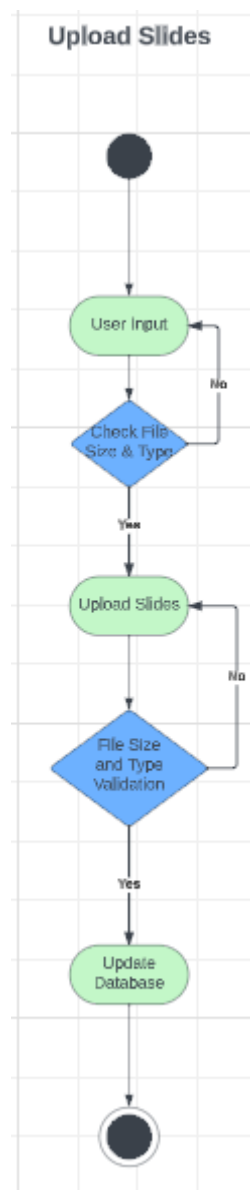
Explanation

- The user will simply select the option to upload the slides.
- After that it will check the file size and format.
- If it is correct and validated, the slides will be uploaded.

Start Slideshow

Start SlideShow
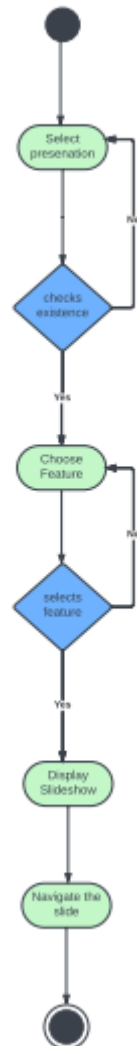
Explanation

- The user will simply upload the pptx files first.
- After that it will select the option to start slideshow.
- Different modes will be displayed.
- The user will select the mode accordingly.
- The slideshow will start working.

Highlight Images

Highlight Images

Explanation

1.1.1.1.1.   Load PPT Slide with Images:

The process starts by loading a PowerPoint (PPT) slide that contains images.

- The system attempts to load the slide with images.
- A condition checks if the loading process was successful. If it's unsuccessful, appropriate actions are taken.

1.1.1.1.2.   Identify and Highlight Images:

If the slide with images is successfully loaded, the system proceeds to identify and highlight the images.

1.1.1.1.3.   End of Highlighting Process:

After highlighting the images, there are two conditions:

The process concludes.

- If the images were not highlighted as expected, appropriate actions are taken.

If the highlighting process was not successful, error handling or notifications may be necessary.

Structure Chart
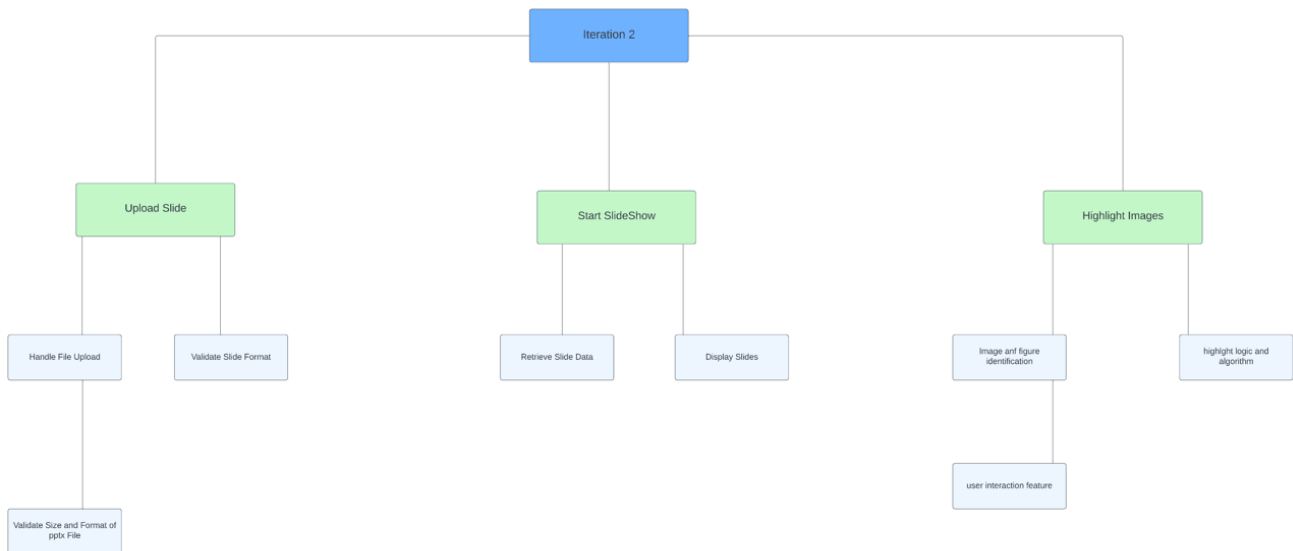
Explanation

Upload Slides

- involves uploading of the pptx files.
- Validation for pptx files size and format.

Start Slideshow

- Includes uploading the pptx files.
- Starts displaying the slides in a slideshow mode.

Figure Identification and Highlighting

- involves image recognition and diagram identification.
- Animation logic for highlighting figures.

Architecture Diagram

ERD Diagram

Wireframes:

Screen 1

Screen 2

Screen 3

Screen 4

Screen 5

Screen 6

Implementation Details

Iteration 2

Our project has so far leveraged to upload PowerPoint files. This enables us to not only capture the display content but also associate it with the respective slide numbers, facilitating easier reference and organization of the presentation.

Moreover, we've developed a Python program that empowers users to transform their PPTs. With this tool, users can input a PowerPoint presentation, and it will generate a new PPT where figures are intelligently highlighted. The beauty of this feature lies in its adaptability — users have full control over the colour and width of the highlighting, allowing for customization to suit their preferences and presentation aesthetics.

To enhance user experience, we've also designed a user-friendly graphical user interface (UI) that showcases the full spectrum of functionalities our project offers. This UI serves as an interactive portal where users can easily navigate and observe the tool's capabilities, making the entire process more intuitive and accessible.

In our quest for efficient and effective transcription, we've explored multiple models for the project. Our focus here is twofold: accuracy and latency. We understand that minimizing latency is a significant concern, especially in time-sensitive contexts. As a result, we've conducted thorough comparisons of different models to identify the ones that strike the best balance between speed and precision. This ensures that our tool not only captures spoken content accurately but does so with minimal delay, thereby enhancing the real-time utility of our application.

With these components in place, our project offers a comprehensive solution for managing, enhancing, and transforming PowerPoint presentations, making them more accessible, informative, and visually appealing.

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