Ppt to Video - System Design

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1 Introduction

This system design document outlines the architecture and components of the PowerPoint to Video conversion application. The application extracts text and media from PowerPoint files, uploads the media to an S3 bucket, and generates paired data for a chat application.

2 System Architecture

The system consists of the following main components:

1. **PowerPoint Text and Media Extraction**
2. **S3 Media Upload**
3. **Paired Data Generation for Chat Application**

2.1 PowerPoint Text and Media Extraction

The PowerPoint text and media extraction component is responsible for extracting text and media from PowerPoint files. It uses the following functions:

1. `extract_media_from_pptx`
2. `extract_slide_text`
3. `extract_slide_text_and_media`

2.1.1 `extract_media_from_pptx`

This function extracts media files from a PowerPoint file, uploads them to an S3 bucket, and returns the media paths and positions. It performs the following steps:

1. Creates a temporary ZIP file from the PowerPoint file
2. Copies the PowerPoint file to the output directory
3. Opens the ZIP file and extracts media files from the "ppt/media" folder
4. Loads the PowerPoint presentation and gets the media position for each extracted file
5. Uploads the media files to the S3 bucket with the slide number as the folder name
6. Removes the temporary PowerPoint file
7. Returns the media paths and positions

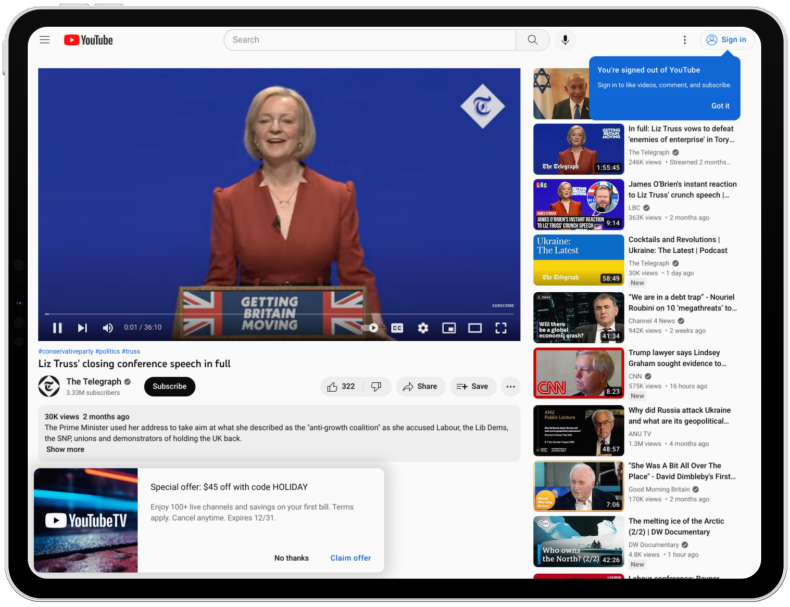

Figure 1: Extract Media from PowerPoint

2.1.2 `extract_slide_text`

This function extracts text content from each slide in a PowerPoint file. It performs the following steps:

1. Copies the PowerPoint file to the output directory
2. Loads the PowerPoint presentation
3. Extracts text content from each slide
4. Removes the temporary PowerPoint file
5. Returns the text content

2.1.3 `extract_slide_text_and_media`

This function combines the functionality of `extract_media_from_pptx` and `extract_slide_text` to extract both text and media from a PowerPoint file. It performs the following steps:

1. Calls `extract_media_from_pptx` to extract media files and upload them to S3
2. Calls `extract_slide_text` to extract text content from the PowerPoint file
3. Pairs the slide text with the corresponding media paths and positions
4. Returns the paired data

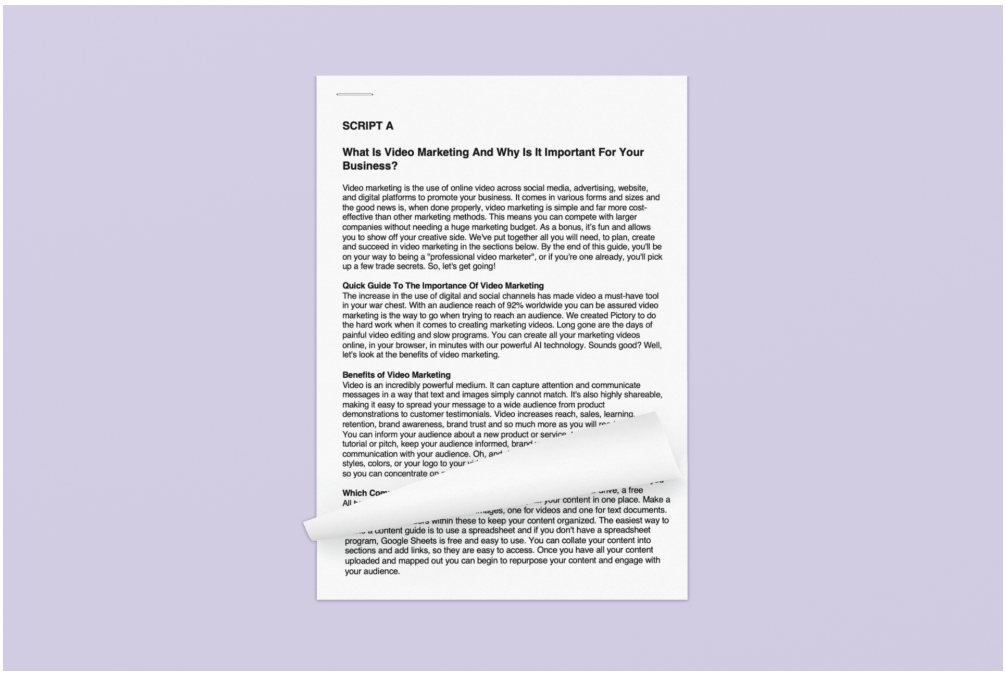

Figure 2: Extract Slide Text and Media

2.2 S3 Media Upload

The S3 media upload component is integrated into the `extract_media_from_pptx` function, which uploads each media file to the S3 bucket with the slide number as the folder name.

2.3 Paired Data Generation for Chat Application

The paired data generation component creates a dictionary that pairs slide text with media paths and positions. This data is used by the chat application to display the appropriate content for each slide.

3 Example Usage

The example usage section demonstrates how to use the system to extract text and media from a PowerPoint file, upload the media to an S3 bucket, and generate paired data for a chat application. It performs the following steps:

1. Sets the PowerPoint file path, S3 bucket name, and AWS credentials
2. Calls `extract_slide_text_and_media` with the necessary parameters
3. Prints the paired data, including the slide number, slide text, and media information

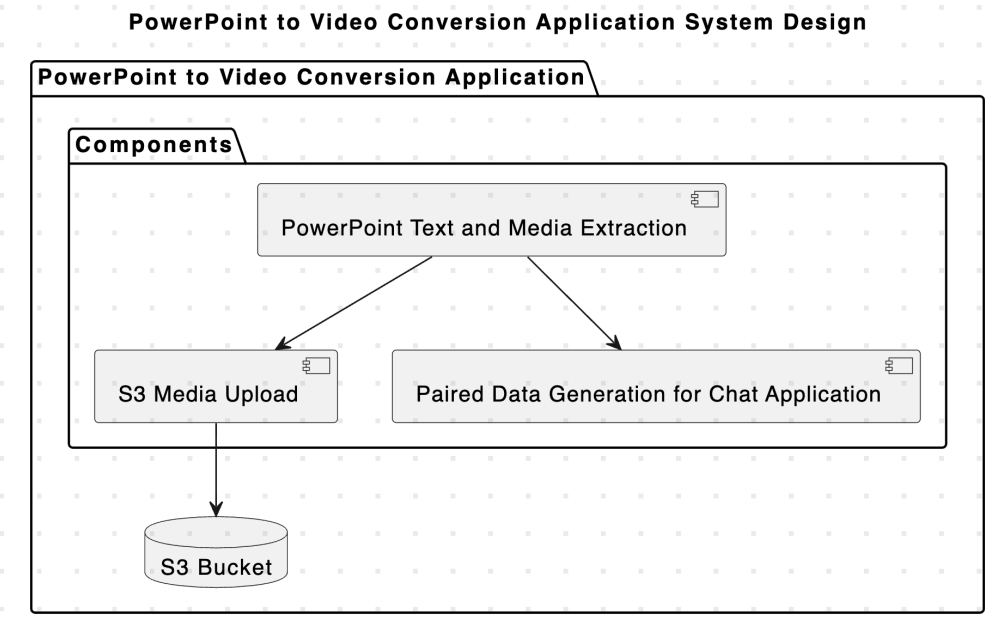

Figure 3: System Design

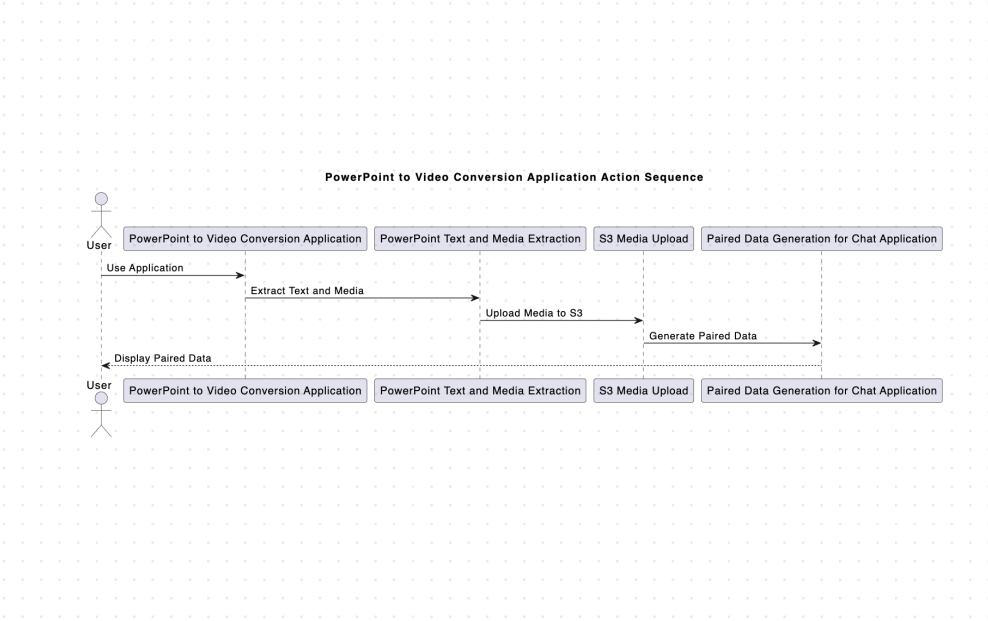

Figure 4: Action Sequence

4 Configuration

The application requires the following configuration:

- Python 3.x
- Required Python packages (listed in requirements.txt)

- AWS credentials with access to an S3 bucket

5 Installation

To install the application, follow these steps:

1. Clone the repository or download the source code.
2. Create a virtual environment (optional but recommended).
3. Install the required packages using pip:

```
pip install -r requirements.txt
```

4. Set the necessary environment variables or update the AWS credentials in the code.

6 Dependencies

The application uses the following Python packages:

- boto3
- python-pptx
- logging
- os
- zipfile
- re
- shutil

7 Contributing

If you find any issues or have suggestions for improvements, feel free to open an issue or submit a pull request.

8 License

This project is licensed under the MIT License.