

Effortless Meeting Analysis Automation

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Abstract—The “Automated DSM Insight Analyzer” is a groundbreaking initiative that revolutionizes the analysis of Daily Stand-Up Meetings (DSMs). Leveraging a sophisticated combination of cutting-edge technologies, including a Flask-based API for audio processing, Azure Speech-to-Text for precise transcription, and the GPT API for advanced Natural Language Processing (NLP), this solution provides comprehensive insights. It addresses challenges in resource management and bug tracking, ensuring the prompt generation of actionable insights. With multilingual support and seamless integration with Google Calendars, it enhances productivity, offering a user-friendly platform that fosters improved collaboration and project success through the extraction of valuable insights from daily meetings.

Index Terms—Daily Standup Meetings, Speech-to-text, Natural Language Processing, Google Calendar, Application programming interface, Large Language Model, Flask-based API, Deep learning, ChatGPT API, Google Speech Services, Python.

I. INTRODUCTION

This paper is an innovative endeavor that has the potential to completely transform the daily standup meetings. The “Automated DSM Insight Analyzer” project is a revolutionary effort aimed at transforming the analysis of Daily Stand-Up Meetings (DSMs) through an advanced software solution. Recognizing the limitations of traditional manual tracking and analysis methods, this initiative leverages cutting-edge technologies to create a streamlined and efficient process. It incorporates a Flask-based API for audio processing and insights extraction, Azure Speech-to-Text for precise transcription, and the GPT API for sophisticated Natural Language Processing (NLP). By embracing this comprehensive framework, the Automated DSM Insight Analyzer facilitates systematic DSM analysis, enabling the extraction of meaningful insights, identification of key points, and complex linguistic analysis. This approach addresses challenges related to resource utilization, bug tracking, and ensures the timely generation of actionable insights. The project’s commitment to inclusivity is evident through its multilingual support, catering to diverse language preferences within teams. Furthermore, the seamless integration with Google Calendars enhances productivity by automating the addition of notes and reminders based on DSM insights. With a clear emphasis on transcription accuracy, insightful analysis, and integration with widely-used tools, the Automated DSM Insight Analyzer strives to provide teams with a powerful and user-friendly platform. Ultimately, it aims to empower teams to extract valuable insights from their daily meetings, fostering improved collaboration and contributing to project success. In summary, the Automated DSM Insight Analyzer project is not only a technological advancement but also a user-centric solution that addresses the complexities of DSM analysis, offering teams an efficient and accessible platform for enhancing collaboration and project outcomes.

II. PROBLEM DEFINITION

Daily Stand-Up Meetings (DSMs) are a common practice in agile software development teams, providing a platform for team members to discuss their progress, plans, and any obstacles they are facing. However, manually analyzing and tracking the discussions in these meetings can be time-consuming and error-prone. Some of the key challenges faced in manual DSM analysis include:

Resource Management: It is challenging to track and manage team resources efficiently during and after the meeting. Identifying the right tasks for team members based on their skills and availability can be cumbersome.

Actionable Insights: Extracting actionable insights from the discussions, such as key decisions, action items, and areas needing attention, can be subjective and inconsistent across different team members.

Multilingual Support: In teams with members from diverse linguistic backgrounds, language barriers can hinder effective communication and understanding during the meetings.

Integration with Google Calendars: Manually updating Google Calendars with meeting insights, action items, and reminders can be tedious and prone to errors.

User-Friendly Platform: Existing tools for DSM analysis may lack a user-friendly interface, making it difficult for team members to interact with the system and access meeting insights efficiently.

The "Automated DSM Insight Analyzer" project aims to address these challenges by leveraging advanced technologies to automate the analysis of DSMs. By providing a comprehensive and user-friendly platform, the project seeks to streamline DSM analysis, enhance collaboration among team members, and improve project outcomes.

III. RELATED WORK

Effortless Meeting Analysis (EMA) aims to streamline Daily Stand-Up Meetings (DSMs) and empower teams. This literature review explores the functionalities that fuel EMA's effectiveness. Capturing high-quality audio is the foundation, achievable through video conferencing platform integration or dedicated recorders. EMA addresses background noise and microphone [1][2] placement to optimize audio quality. Speech-to-text conversion [2][4][8] is performed using Automatic Speech Recognition (ASR) algorithms. The accuracy of ASR plays a vital role and EMA tackles this by choosing reliable ASR APIs and Natural Language Processing (NLP) [5][10] is then applied to analyze the converted text. Topic modeling, sentiment analysis, and keyword extraction [3] are some techniques used to unearth valuable insights from meeting discussions. EMA doesn't stop at summaries; it pinpoints actionable items and surfaces hidden insights that might not be readily apparent [6][7]. Effortless Meeting Analysis integrates with Google Calendar, transforming insights into actionable tasks. Meeting summaries become calendar notes and reminders are generated based on identified action items. This fosters accountability and ensures critical tasks don't slip through the cracks. A Flask-based API [5] serves as the core application framework, managing user interaction and communication with external speech recognition and NLP APIs [5]. This API [9] layer presents an opportunity for future expansion through integrations with other project management or communication tools. In essence, Effortless Meeting Analysis leverages various technologies to analyze meeting audio, extract insights, and transform them into actionable information, all while integrating with existing calendars to streamline workflows and empower teams.

IV. PROPOSED METHODOLOGY

The methodology for achieving the full potential for the daily standup meetings can be achieved through:

Development of Flask-based API for Audio Processing: The initial phase involves the creation and implementation of routes and endpoints within a Flask-based API. These components are tailored to manage audio processing, insights extraction, and summary generation. This robust framework guarantees efficient handling of audio data, accurate extraction of insights, and the generation of concise summaries in a methodical and structured manner.

Integration of Azure Speech-to-Text for Transcription: The subsequent step entails the integration of the DSM transcription module to convert audio recordings into text format. By harnessing the capabilities of Azure speech-to-text API, this integration ensures the delivery of high-quality and precise transcription. This step is pivotal in converting spoken content into a format conducive to further analysis and summarization.

Harnessing GPT API for Natural Language Processing: Following transcription, the project leverages the GPT API for in-depth analysis of transcribed content. This advanced natural language processing tool augments the project's capacity to extract meaningful insights, identify key points, and conduct intricate linguistic analysis. It acts as a cornerstone for comprehending and summarizing the content effectively.

Incorporation of Multilingual Support for Enhanced Accessibility: A key feature of the project involves proficiency in multiple languages, including US-English, Spanish, and various Indic-Regional languages. This multilingual support significantly enhances the system's accessibility, ensuring that it caters to a diverse user base irrespective of language preferences.

Seamless Integration with Google Calendars: The project seamlessly integrates with team members' Google Calendars to streamline productivity. This integration automates the addition of notes and reminders based on insights extracted using the DSM module. It guarantees the availability of crucial information and action items to team members, thereby fostering enhanced collaboration and task management within the team.

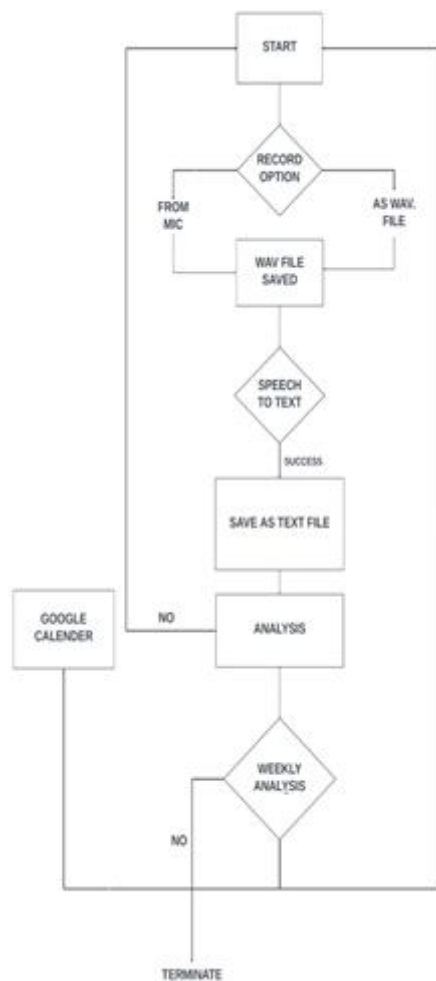


Fig. 1: High Level Diagram

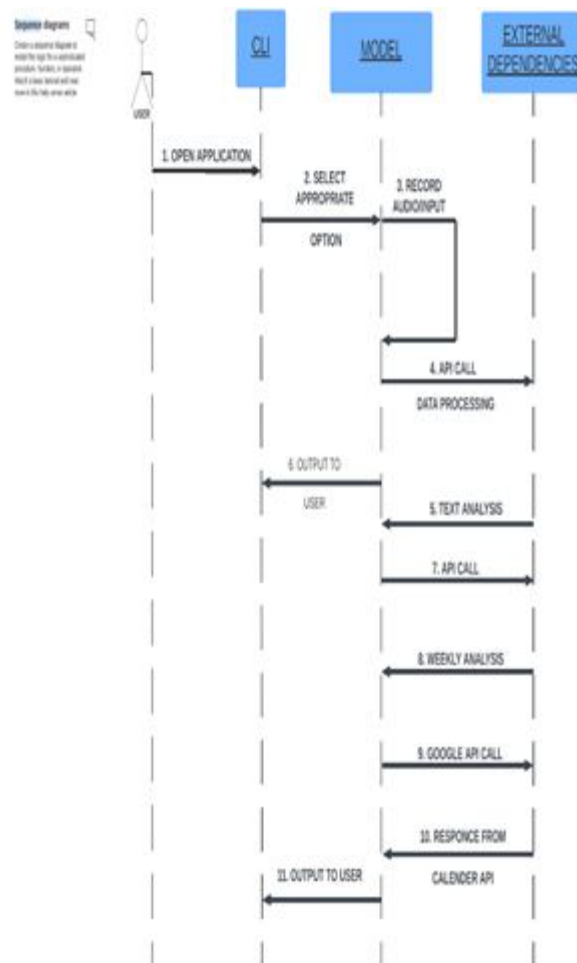


Fig. 2: Low Level Diagram

To summarize, the proposed technique for designing a user-centric virtual try-on platform emphasizes a deep understanding of user needs as well as seamless integration of technological specifications, as shown in Figs 1–3. The goal is to create an innovative solution that meets the changing demands of online shoppers while revolutionizing the virtual shopping experience by prioritizing essential functionalities, using an MVC architecture for modularity, and keeping a focus on user experience throughout the design and development process.

V. RESULTS AND DISCUSSIONS

The results section offers an in-depth evaluation of Effortless Meeting Analysis Automation performance and functionalities. It examines various features, from recording the audio to converting the speech to text and then sending it to the GPT API for summarization and analysis of the transcript which in turn, is followed by google

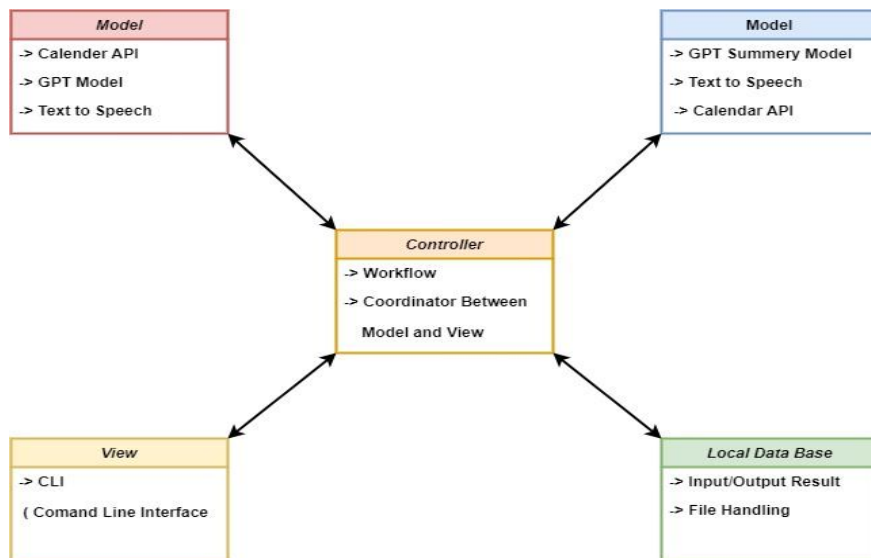


Fig. 3: MVC Architecture

calendar's API integration which puts the actionable items into the calendar for scrum leaders and provides and weekly analysis of individuals participating in the scrums for the leader. These analyses provide valuable insights into the platform's impact on productivity of daily standup meetings.

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Available Languages:
1. Bengali (India)
2. English (India)
3. Gujarati (India)
4. Hindi (India)
5. Kannada (India)
6. Malayalam (India)
7. Marathi (India)
8. Tamil (India)
9. Telugu (India)
10. English (United States)
11. Spanish (United States)
Enter the number corresponding to your preferred language: █
  
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Fig 4: Choose a Language

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Selected language: English (India)

Welcome to DSM Handler :
Enter 1 to Record from your Microphone
Enter 2 to Record from Standard Audio Output
Enter 3 to Anaylze Weekly Data
Enter 4 to Exit

Your Choice: 1█
  
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Fig 5: Daily Stand-up Main Menu

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Taking Audio from Microphone as an Input
Listening...
Press 'q' to stop.
Recording started...
done...
Recording stopped.
Audio saved to output.wav
  
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Fig 6: Speech to text flow

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INFO:http:HTTP Request: POST https://api.assemblyai.com/v2/upload "HTTP/1.1 200 OK"
INFO:http:HTTP Request: POST https://api.assemblyai.com/v2/transcript "HTTP/1.1 200 OK"
INFO:http:HTTP Request: GET https://api.assemblyai.com/v2/transcript/f925feba-c267-4294-8ca2-103818606e37 "
HTTP/1.1 200 OK"
INFO:http:HTTP Request: GET https://api.assemblyai.com/v2/transcript/f925feba-c267-4294-8ca2-103818606e37 "
HTTP/1.1 200 OK"
INFO:http:HTTP Request: GET https://api.assemblyai.com/v2/transcript/f925feba-c267-4294-8ca2-103818606e37 "
HTTP/1.1 200 OK"
Final Transcribed Text: My name is Manish Kumar and I am working as a team lead in nuclei. We are at the pha
se of deployment of our project that is related to SaaS marketplace.
  
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Fig 7: Summary Generation and Actionable Item

Fig. 4 incorporates multilingual support, allowing users to select their preferred language for both audio input and insights generation. This eliminates language barriers and empowers teams with a global workforce to participate seamlessly in DSMs and benefit from the extracted insights, regardless of their native tongue.

Turning now to Fig. 5, starts analysis for a new DSM by choosing the audio input (microphone or file) and language (if supported). Manage past recordings by playing them back, viewing a list, or potentially deleting them. Dive into summaries, key points, and detailed reports extracted from past analyses.

In Fig. 6, you provide the audio, either live through your microphone or by uploading a pre-recorded file. The system might clean up the audio by removing background noise or adjusting volume levels. Then, the magic happens! Effortless Meeting Analysis integrates with a powerful speech-to-text service, likely Google Speech-to-Text, which converts the spoken words into a text transcript.

Effortless Meeting Analysis integrates with Google Calendar, transforming your Daily Stand-Up Meetings (DSMs) into action hubs. Say goodbye to scrambling for notes! Effortless Meeting Analysis analyzes insights

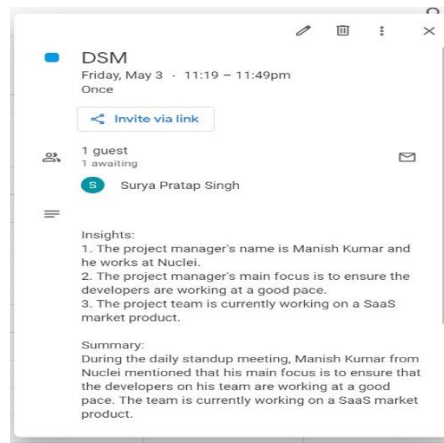


Fig 8: Google Calendar Integration

from the meeting transcript and automatically populates Google Calendar events with concise summaries of key points and action items. This ensures everyone has access to crucial information directly within their existing calendars. But it gets better! Effortless Meeting Analysis also leverages insights to generate automated reminders within Google Calendar. No more missed deadlines or forgotten tasks.

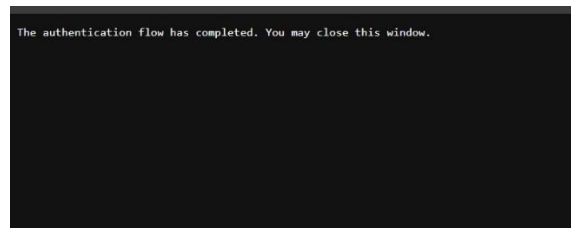


Fig 9: Authentication Success message

In summary, the message "Authentication Success" signifies a victory! You've successfully navigated the system's security measures and are now authorized to enter. Imagine it like a digital handshake - the system has verified your identity and granted you access. This ensures only authorized users can interact with sensitive information or perform specific actions. Authentication success paves the way for you to explore the full potential of the system. Whether it's accessing confidential data, contributing to collaborative projects, or personalizing your settings, successful authentication is your key. So breathe a sigh of relief, and get ready to leverage the system's functionalities to their fullest potential!

VI. CONCLUSION

To sum up, Effortless Meeting Analysis revolutionizes Daily Stand-Up Meetings (DSMs) by leveraging AI. It goes beyond summaries, extracting key performance indicators (KPIs) from meeting transcripts using GPT-API's Natural Language Processing (NLP) to identify improvement areas. Effortless Meeting Analysis integrates with a speech-to-text service, likely Azure's, to automatically transcribe DSMs and generate summaries through GPT-API. This eliminates manual note-taking and ensures everyone has access to key points. Furthermore, it integrates with Google Calendar, automating note creation and reminders based on extracted insights, fostering better organization and accountability. By automating tasks and providing valuable insights, Effortless Meeting Analysis frees teams to focus on collaboration and achieving project goals. It empowers teams to transform DSMs into springboards for success.

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