

Meeting Transcription and Summary Tool

[GithubLink](#)

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1. Overview of the Project

1.1 Introduction

The Meeting Transcription and Summarization Tool is a comprehensive solution designed to streamline the process of transcribing audio or video meetings and extracting key insights such as summaries, decisions, key points, and action items. This tool leverages state-of-the-art natural language processing (NLP) models, including Whisper for transcription and Groq via LangChain for summarization, to offer an efficient and accurate solution for understanding and managing meeting content.

In today's fast-paced work environment, the need for automating the documentation of meetings is more critical than ever. With many organizations holding multiple meetings daily, the manual process of note-taking and summarizing can be time-consuming and prone to errors. By utilizing advanced AI-driven technologies, this tool provides an automated system that not only transcribes spoken words but also highlights the most important aspects of the conversation.

The integration of Whisper, a powerful speech-to-text model, enables the tool to handle a wide range of audio and video formats, ensuring that transcription can be accurately performed on diverse content. Once the transcription is complete, the Groq model, implemented through LangChain, analyzes the transcript to produce meaningful outputs, including a comprehensive meeting summary, key points discussed, decisions made, and actionable items for follow-up.

This project provides an intuitive, easy-to-use interface through a Streamlit app, allowing users to upload their meeting files, automatically generate transcriptions, and receive organized summaries for more effective collaboration and task management. With the ability to save results in both PDF and Word formats, users can easily share the meeting outcomes with stakeholders.

This tool has applications in various sectors, including business, education, and healthcare, where meeting efficiency and documentation are essential for decision-making and record-keeping.

1.2 Objective

The primary objective of the Meeting Transcription and Summarization Tool is to automate the transcription of audio and video recordings of meetings, converting spoken content into text and extracting valuable insights from the transcribed material. The tool is designed to accurately transcribe speech from audio or video files using the Whisper model, ensuring high-quality transcriptions across various languages and audio formats. In addition to transcription, the tool leverages advanced language models, such as Groq integrated with LangChain, to automatically generate detailed summaries that capture key points, decisions made, and action items from the transcribed content, thereby providing a comprehensive overview of the meeting. To streamline documentation, the system offers an easy-to-use interface for uploading meeting files, conducting transcription and summarization, and accessing the results in multiple formats,

such as PDF and Word, for efficient sharing and distribution. Furthermore, the tool is designed to support a variety of meeting types—business discussions, educational lectures, team collaborations, or healthcare consultations—enabling the automatic generation of summaries, decisions, and action items to improve productivity and reduce the manual effort involved. Finally, the solution is built to be scalable, ensuring the ability to handle large volumes of meetings across different domains with speed, reliability, and adaptability to meet diverse organizational needs.

1.3 Background

In today's fast-paced professional environments, meetings play a crucial role in decision-making, collaboration, and information sharing. However, the process of documenting meetings, extracting key insights, and following up on action items can be time-consuming and prone to human error. Many organizations still rely on manual methods to transcribe and summarize meeting content, leading to inefficiencies, incomplete records, and delays in implementing decisions.

The advancement of Speech-to-Text (STT) and Natural Language Processing (NLP) technologies has created opportunities to automate and enhance the transcription and summarization process. Among these advancements, OpenAI's Whisper model has proven to be highly effective for accurate, multilingual transcription from audio and video recordings. At the same time, models from Hugging Face and Groq, integrated with frameworks like LangChain, offer sophisticated text summarization capabilities, capable of analyzing complex transcripts and extracting key points, decisions, and action items automatically.

Despite the availability of these technologies, there is a gap in the market for an integrated tool that seamlessly combines transcription and summarization into one workflow. Existing solutions are either fragmented, focusing on only one part of the process, or do not offer the level of accuracy and customization needed for various types of meetings. Additionally, the need for real-time and scalable solutions for transcriptions and summaries, which can be easily shared, remains unmet.

This project addresses this gap by developing an end-to-end tool for transcribing meeting audio/video and summarizing the content using state-of-the-art models. The tool leverages Whisper for transcription and Groq, Hugging Face models, and LangChain for extracting critical information from the transcribed text. This solution not only improves accuracy and efficiency but also makes meeting documentation more accessible and actionable for teams and organizations of all sizes.

2. Key Features

The key features of the Meeting Transcription and Summarization Tool are designed to provide users with an efficient, automated solution for managing meeting content. These features include:

1. **Automated Audio/Video Transcription:** The tool utilizes the Whisper model to transcribe audio and video files into accurate and readable text. The transcription process supports various languages and audio formats, ensuring broad compatibility and high-quality results for diverse meeting types.
2. **Summarization of Key Insights:** Leveraging advanced language models like Groq integrated with LangChain, the tool automatically generates concise summaries from the transcribed text. The summaries include essential information such as key points, decisions made, and action items, providing users with a clear and structured overview of the meeting.
3. **Chunking for Large Transcripts:** To manage long transcriptions, the tool employs a chunking mechanism that divides the transcript into smaller sections. This approach helps improve processing efficiency and ensures that the summarization models handle text within their capacity limits, optimizing output quality.
4. **Multiple Output Formats:** The tool offers flexibility in how results are presented. Users can export meeting summaries, key points, decisions, and action items in widely-used formats such as PDF and Word. This feature enables easy sharing and distribution of meeting content, making it accessible to all stakeholders.
5. **Actionable Insights Extraction:** The tool goes beyond basic summarization by extracting actionable insights from the transcribed content. It identifies key decisions, action items, and important discussion points, helping users quickly understand follow-up tasks and critical outcomes.
6. **Integration with Groq Models:** The integration of LangChain with Groq's language models enhances the summarization capabilities by leveraging state-of-the-art NLP technology. This ensures that the tool produces summaries that are not only accurate but also contextually rich, capturing the essence of the meeting discussions.

3. Need for the Project

The increasing reliance on remote communication, virtual meetings, and collaborative tools in both professional and academic settings has led to an exponential rise in the amount of meeting content generated. While these meetings provide valuable insights, decisions, and action items, they often go unrecorded or under-documented, leading to gaps in communication, missed deadlines, and reduced productivity. This underscores the need for an automated solution that can accurately transcribe and summarize meetings, ensuring all critical details are captured and easily accessible.

Several factors highlight the need for a tool like the one developed in this project:

1. **Time Efficiency:** Manual transcription of meetings is a labor-intensive process that can take several hours. Automating this task significantly reduces the time required to transcribe large volumes of meeting content, freeing up resources for more critical tasks.

2. **Accuracy:** Human error in manual transcription is inevitable, leading to mistakes, omissions, and misinterpretations of important information. Automated transcription, especially with models like Whisper, offers more accurate and consistent results, reducing the risk of errors and enhancing the reliability of meeting records.
3. **Scalability:** As organizations and teams grow, the volume of meetings also increases. Traditional methods of transcription and summarization do not scale well in large organizations with frequent meetings. By automating this process, the tool can handle large volumes of meeting data without the need for additional manpower, making it a scalable solution.
4. **Actionable Insights:** Extracting meaningful insights from meeting transcripts manually is time-consuming and often results in incomplete or ambiguous summaries. With the integration of Groq and Hugging Face models, the tool can automatically identify key points, decisions made, and action items, ensuring that the critical takeaways from each meeting are clearly communicated and easily followed up.
5. **Accessibility:** Meeting summaries and action items often get lost in email threads or are not properly communicated to all relevant stakeholders. By providing a tool that can export summaries into formats such as PDF and Word, this project ensures that meeting documentation is easily accessible and shareable.
6. **Collaboration:** In collaborative environments, it is essential that all team members have access to accurate and comprehensive records of meetings. The automated transcription and summarization tool provides a centralized solution, improving communication across teams and ensuring everyone stays informed and aligned.
7. **Multilingual Support:** As businesses expand globally, there is a growing need for multilingual transcription services. Whisper supports transcription in multiple languages, addressing the need for a tool that can handle diverse linguistic environments and provide accurate transcription across different languages.

In summary, the need for this project stems from the challenges organizations face in managing and documenting the ever-growing volume of meeting content. The proposed solution offers a time-saving, accurate, and scalable approach to transcription and summarization, ultimately improving the efficiency and productivity of teams while enhancing collaboration and communication.

4. Target Market

The target market for the Meeting Transcription and Summarization Tool spans a wide range of industries and sectors, all of which require efficient management of meeting content, actionable insights, and timely follow-up on decisions. The tool's ability to automate transcription, summarization, and extraction of key points makes it highly valuable for organizations that rely

on frequent meetings and collaboration. Below are the primary sectors and user groups that can benefit from this tool:

1. Corporate Enterprises

- Large Enterprises: Large organizations with numerous teams and frequent internal meetings can greatly benefit from automated transcription and summarization. With hundreds of meetings taking place across different departments, the tool ensures that all important discussions are accurately captured and summarized. It can also help in managing meeting records, making it easier to track decisions and follow-up tasks.
- Small and Medium-sized Enterprises (SMEs): SMEs that may lack dedicated resources for manual transcription can leverage the tool for cost-effective and scalable solutions, ensuring that no valuable information is lost in their meeting discussions.

2. Educational Institutions

- Universities and Research Institutions: Professors, researchers, and academic administrators often attend or host meetings with large volumes of content. This tool is beneficial for summarizing lectures, seminars, and research meetings, helping students, faculty, and researchers focus on critical points and action items. It can also be used to transcribe lectures for students to refer to, making learning more accessible.
- Online Learning Platforms: With the rise of e-learning and virtual classrooms, educators and students can benefit from automated transcriptions and summaries of class discussions and webinars, improving learning outcomes and enabling review of key topics.

3. Legal Sector

- Law Firms: Law professionals frequently engage in client meetings, case discussions, and strategy sessions. The tool can be used to transcribe and summarize legal proceedings, ensuring that critical decisions, deadlines, and action items are captured accurately for future reference. Additionally, it helps legal professionals stay organized and aligned during complex cases.
- Courts and Legal Proceedings: Automated transcription is especially valuable in the legal field for court proceedings, depositions, and hearings, where accuracy and quick turnaround times are essential. Summarization allows for easy access to key rulings and decisions made during sessions.

4. Healthcare Sector

- Hospitals and Clinics: Medical professionals often attend meetings and case discussions that involve complex medical terminology and patient-related information. Transcription and summarization tools are essential in ensuring that all key points, diagnoses, and action items are documented for future reference and collaboration among medical staff.
- Telemedicine: With the increasing reliance on telemedicine, particularly in remote consultations, this tool can help transcribe doctor-patient interactions, making it easier to track patient concerns, diagnoses, and prescribed treatments. This can also assist in providing detailed follow-up care instructions.

5. Consulting Firms

- Management Consultants: Consultants who work with clients to address business challenges often have to document meetings, workshops, and brainstorming sessions. The tool enables them to automate this process, ensuring that important insights, recommendations, and follow-up tasks are clearly communicated to clients.
- Strategy Sessions: Strategic planning meetings can often involve a large amount of content that needs to be distilled into actionable steps. The tool helps summarize these sessions, ensuring that key takeaways are preserved and decisions are implemented effectively.

6. Technology and Software Development

- Software Development Teams: In agile development environments, where daily stand-ups and sprint reviews are common, the tool can assist in transcribing and summarizing these fast-paced discussions. It ensures that developers and project managers have accurate records of progress, blockers, and action items.
- Product and Project Management: Product managers and project teams can use the tool to document meetings related to product development, ensuring that features, timelines, and decisions are captured and actionable.

7. Government and Public Sector

- Government Agencies: Meetings involving policy-making, public administration, and interdepartmental coordination can benefit from accurate and easily accessible records. This tool can assist in transcribing and summarizing government meetings, ensuring that public policies and decisions are transparently documented.
- Non-profit Organizations: Non-profits that frequently organize community outreach meetings, donor meetings, and project planning sessions can use this tool to manage meeting documentation, ensuring key action items and decisions are tracked and followed up on efficiently.

8. Media and Content Creation

- Journalists and Media Professionals: Reporters, interviewers, and content creators can utilize the tool to transcribe interviews, press conferences, and public speeches. Summaries of these sessions can be generated to help in article creation, ensuring that key points are highlighted and used accurately.
- Content Creators and YouTubers: Content creators who host podcasts, webinars, or discussions can leverage the tool to transcribe and summarize their content, offering more accessible formats for their audience.

9. International Businesses

- Multinational Corporations: Global teams operating across different time zones and languages require transcription and summarization tools that can handle multilingual content. This tool, powered by Whisper's multilingual capabilities, supports a wide range of languages, making it valuable for international teams and clients.

In essence, the target market for this project is vast and diverse, spanning industries and sectors that require efficient documentation, accurate transcription, and actionable insights from meetings. The tool's scalability, accuracy, and versatility make it an essential solution for organizations and individuals looking to improve their productivity, communication, and collaboration across various domains.

5. Project Methodology

5.1 Technical Architecture

The technical architecture of the Meeting Transcription and Summarization Tool integrates multiple machine learning models and tools to transcribe, process, and summarize meeting recordings effectively. The system leverages both Hugging Face models and Groq models for different stages of the pipeline. Below is an overview of the architecture:

1. Audio/Video Upload: The process starts with the user uploading an audio or video file containing the meeting content via the Streamlit interface. This file is temporarily saved on the server for processing.

2. Audio Transcription: Once the file is uploaded, the Whisper model (a speech-to-text model by OpenAI) is used to transcribe the audio content into text. The model is loaded in the backend and works by converting spoken language into written text.

3. Text Summarization: After obtaining the transcription, the text is processed using both Hugging Face models and Groq models:

- **Hugging Face Models:** The Hugging Face models, such as BART-large-CNN, Pegasus-xsum, and BART-large-xsum, are employed for text summarization. These models are pre-trained transformer-based models that excel at summarizing long pieces of text. They are used to extract a concise summary of the meeting, as well as highlight key points, decisions made, and action items discussed in the meeting.
- **Groq Models:** The Groq models (e.g., llama-3.3-70b-versatile) are integrated using the LangChain framework for NLP tasks. These models are used to perform tasks such as generating summaries, extracting key points, decisions, and action items from the transcription. Groq's high-performance models are utilized to handle these tasks efficiently at scale.

4. Result Generation: The outputs from the Hugging Face models and Groq models include:

- **Meeting Summary:** A concise description of the meeting's content.
- **Key Points:** Key highlights and discussions from the meeting.
- **Decisions Made:** Important decisions made during the meeting.
- **Action Items:** Tasks and responsibilities assigned during the meeting.

These outputs are then displayed on the Streamlit app and saved in multiple formats for export.

5. Exporting Results: The summarized content, including key points, decisions, and action items, can be exported by the user into different formats such as PDF and Word. This allows for easy sharing and further documentation of the meeting discussions.

6. Deployment: The entire system is deployed on a web interface using Streamlit, which serves as the front-end application. Users interact with the system by uploading files, selecting models, and viewing the results. The back-end processes run the transcription and summarization tasks using the Whisper, Hugging Face, and Groq models.

5.2 Methodology

The methodology of this project integrates the transcription, summarization, and extraction of key information from meeting audio files. The overall workflow is divided into distinct stages: transcription, summarization using multiple models, and extracting actionable information (key points, decisions, and action items). Each component leverages different advanced models, including Hugging Face's BART, Pegasus, and Groq-based models, to provide a comprehensive solution.

Transcription

The first step in the workflow is the transcription of audio files. This is achieved using the Whisper model, a powerful automatic speech recognition (ASR) model developed by OpenAI. The transcription process is implemented through the `transcribe_audio` function, which accepts an audio file, loads the Whisper model (specifically the "base" version), and converts the speech

to text. This is done by calling the `model.transcribe(file_path)` method. The Whisper model is robust, offering excellent accuracy in transcribing speech across a variety of languages and accents. The resulting text serves as the input for the next phase of the project: summarization.

Summarization

After transcription, the meeting text is summarized using Hugging Face Transformers models, specifically BART, Pegasus, and BART-XSum. These models have been chosen for their performance in summarization tasks.

1. BART (Bidirectional and Auto-Regressive Transformers): The "facebook/bart-large-cnn" model is used for general summarization. BART is a sequence-to-sequence model that works well on long-form text summarization tasks due to its ability to combine both bidirectional and auto-regressive mechanisms.
2. Pegasus: The "google/pegasus-xsum" model is designed for abstractive summarization. It excels in generating concise summaries and is particularly effective for news articles and meeting transcripts.
3. BART-XSum: The "facebook/bart-large-xsum" model is fine-tuned for extreme summarization, producing very concise summaries that capture only the most essential points of the text.

To handle the input text size limitations (such as the 1024-token constraint in the Hugging Face API), the text is split into manageable chunks using a chunking function. This function divides the transcript into smaller parts, ensuring that each chunk's length does not exceed the model's token limit. The `split_text` function first tokenizes the text and groups it into chunks, ensuring that no chunk exceeds the predefined maximum length (default 1024 tokens). Each chunk is then summarized individually by each model, and the results are combined to form a complete summary.

Additionally, the summarizer function invokes each model to process the chunks sequentially. After summarizing all chunks, the individual summaries are concatenated into a complete summary. The summarized text is further processed to extract key points, decisions, and action items from the summary using a separate helper function, `extract_information`, which generates concise responses based on the task type (key points, decisions, or action items).

Summarization Using Groq

In addition to the Hugging Face models, the project also uses the Groq model for NLP tasks. Groq is an accelerator designed to speed up large-scale machine learning tasks, and it integrates seamlessly with LangChain, a framework that helps manage NLP pipelines. Groq is particularly well-suited for processing large datasets and generating summaries in real-time.

The LangChain integration is implemented in the `summarizer_groq.py` file, where the Groq model is initialized using an API key. The model performs the summarization by analyzing the meeting transcript and generating a detailed summary, key points, decisions, and action items. The Groq summarization is carried out in the `summarize_with_langchain_groq` function, where the input text is processed using a predefined prompt that instructs the model to provide these key outputs. The results from Groq are stored and can be exported to either a PDF or Word document.

Exporting Summaries

Once the summaries are generated, they are exported into different formats (PDF, Word) using the `export_to_pdf` and `export_to_word` functions. These functions handle the formatting and saving of the summaries, key points, decisions, and action items into a professional document format, ready for sharing with stakeholders. The `reportlab` library is used to generate PDFs, and the `python-docx` library is used to create Word documents. The process ensures that users can easily share the summarized and actionable information in their preferred format.

Error Handling and Optimization

Throughout the entire process, robust error handling mechanisms are in place to ensure smooth execution. Each function includes try-except blocks that catch potential errors, such as file access issues, model loading problems, or API connection failures. Furthermore, optimization strategies are used to split large transcripts into smaller chunks, which are then processed by the models to stay within the token limits.

5.3 Why These Models?

- 1. Hugging Face Models:** The choice of BART, Pegasus, and BART-XSum is due to their strong performance in summarization tasks. BART is a general-purpose model that works well for many types of text, while Pegasus and BART-XSum are specialized for more concise and extreme summarization. These models can effectively process large, unstructured meeting transcripts and provide actionable summaries.
- 2. Groq Model:** The integration of Groq is an important part of this project as it offers high-speed inference capabilities for large-scale NLP tasks. Groq accelerates the summarization process and is particularly useful when dealing with large audio files or meeting transcripts. The use of LangChain with Groq provides a flexible and scalable pipeline for summarizing and extracting key information from meeting transcripts.

By combining these cutting-edge models and techniques, the project provides an efficient, accurate, and scalable solution for transcribing, summarizing, and extracting key insights from meeting discussions.

6. Limitations

While this project successfully integrates transcription and summarization of meeting data, several limitations must be acknowledged. These limitations arise due to constraints in the technology and models utilized, rather than shortcomings in the design or execution of the project itself.

- 1. Lack of Real-Time Transcription:** One notable limitation is the absence of real-time transcription capabilities. Due to the nature of the Whisper model, transcription is processed offline. This means that transcription occurs after the meeting has been recorded, and there is no live transcription during the meeting. Real-time transcription would require a more sophisticated setup, including continuous processing and potentially leveraging more powerful resources, which is beyond the scope of this project.
- 2. Use of Small Models:** In this project, we have used smaller, less computationally intensive models for both transcription and summarization. While these models perform adequately for basic tasks, their output quality may not always meet the highest standards in terms of accuracy and contextual understanding. The limitations of these smaller models become evident in the results, where summaries or transcriptions may lack fine details or exhibit occasional inaccuracies. It is important to note that the use of more complex, larger models could enhance the output quality significantly, but this would also involve increased computational resources, which were not available for this project.
- 3. Dependency on Audio Quality:** The accuracy of the transcription process is heavily dependent on the quality of the audio input. In real-world scenarios, meeting recordings often contain background noise, overlapping speech, or unclear audio, which can result in incorrect or incomplete transcriptions. While the Whisper model is robust to some extent, its performance may degrade with poor audio quality, leading to errors in transcription and, consequently, in the downstream summarization and analysis.
- 4. Limited Contextual Understanding:** The models used in this project, including both the Whisper and Hugging Face models, do not possess deep contextual understanding or the ability to reason about the content they process. While they are capable of performing tasks like summarization and extracting key points, decisions, and action items, their comprehension is shallow compared to human understanding. For example, they might fail to capture nuanced discussions or the intent behind certain decisions, especially when the context is implicit or subtle.
- 5. Chunking and Text Length Limitations:** In the NLP models, text is split into smaller chunks to adhere to the input size limitations of the models. This process can result in the loss of context between chunks, especially when key points or decisions span multiple chunks. The splitting of text into chunks is necessary to avoid input length

errors, but it may impact the cohesiveness of the output, as the models might not always capture the full context across chunks.

6. **Static Nature of Summarization:** The summarization models used in the project, including BART and Pegasus, generate summaries based on the input text in a static manner. They do not account for evolving contexts or dynamically adjust to different types of meetings. For instance, if a meeting is particularly technical or requires a deeper analysis of specific details, the models might not fully capture the necessary information in the summary, as they are not capable of adapting to the unique nature of every meeting.

7. Output/Results

The results of the meeting transcription and summarization process were evaluated based on the outputs generated by the Whisper model for transcription and the Hugging Face models (BART-large-CNN, BART-large-xsum, and Pegasus) for summarization. In addition, the Groq model, deployed using LangChain, was also tested for summarization and performed exceptionally well, providing clearer and more focused results

7.1 Meeting Transcription

The **Whisper model** performed accurately in transcribing the meeting's audio, capturing key discussions with minimal error. The transcription served as the foundational text for summarization. Key topics such as the proposal to break up department key reviews, issues related to database replication, and improvements in defect tracking were captured effectively. The transcription maintained the continuity of the meeting's flow, allowing for the identification of essential details in the subsequent summarization step.

7.2 Summarization Output

- **Hugging Face Models:**
 - **Key Points:** The Hugging Face models captured the main discussion points, but there was significant overlap in content across sections. For example, the discussion on the R&D MR rates and database replication issues was repeated in both the Key Points and Decisions Made sections, creating redundancy. The Key Points section successfully identified the proposal to break up departmental reviews and the focus on improving database performance. However, the model failed to differentiate between the different categories clearly, leading to repeated information.
 - **Decisions Made:** The decisions to track the percentage of MRs from the community and implement a two-month rotation for departmental reviews were identified but repeated across multiple sections, leading to a less clear outcome.

- **Action Items:** The Hugging Face models correctly extracted action items such as addressing database replication issues and focusing on defect tracking. However, these points were repeated in both Key Points and Action Items, lacking distinct categorization.

Output received from bart-large-xsum

Meeting Summary

Summary

On the agenda for the next GitLab key review is a proposal to break up this meeting into four department key reviews, and to avoid adding three net new meetings to stakeholders counters. I don't know if you've heard of the proposal to cut the number of staff in the R&D department by half, which would be a reduction of about 50%. On the last call, you were asked about the difference between water MRs from the company and those from the community, and you responded by saying that the company only counts community contributions. I think there's a problem with R&D wider MR rate, which is this thing doesn't really move because it's a rate, so it feels like the way to drive this up is to specifically drive community authors to contribute more than one MR per month. A lot of you have been asking questions about how we measure the number of contributions to GitLab from the community and also from external members of the GitLab team. I've been trying to come up with a way to talk about the different parts of the game that we do and how we can improve them. It's a good question and I'm glad you're on the call because I'm a big fan of community MRs and I love that you're working with Max to make that happen. On to seven, I wanted to just touch on the postgres replication issue that we've been having with the data team, which has been an issue for a while. I did ask a question on the database side and I did talk to Craig gums a little bit as well and I'm still trying to figure out, you know, if it's truly just dedicated computation old sort of resource a server. There are a number of things that we're going to do to improve the performance of the database layer at Salesforce.com, but they're not all the same things. I'm going to put into the Infricky review for next week, but I'll probably going to squeeze the balloon on the next area. I just wanted to ask a couple of quick questions on the MRs in the back end of the business, number A on the age of the patients, number B on the backlog and number C on S2. I don't know if you're aware of it, but last quarter we did a key review of our code base to make sure that we weren't creating too many new bugs. I think we're doing it the wrong way if we want to measure the age of open bugs, we should be looking at the entire population that is within the SLO time. I want to go through all the key meeting metrics and look at some of the things that we should be watching out for in the coming months. There was a slight improvement in the rate of decline that we saw in the first quarter of the year, but it was still a pretty big decline. On the security front, we have seen a significant increase in the number of incidents over the last 18 months, and we have had 10 incidents in the last three months. Yes, Chris, thanks for the question, and I'll give you a little bit of context on what's going on with the MR rate. Christopher Doen, chief executive of Doen & Co, has said it's not necessary to keep raising the MR rate, because it's already high enough. Ten is a great number to hold on to, because you're more productive, so you can fix more things, so it's not necessarily opposite.

Key Points

On the agenda for the next GitLab key review is a proposal to break up this meeting into four department key reviews. On the security front, we have seen a significant increase in the number of incidents over the last 18 months. There are a number of things that we're going to do to improve the performance of the database layer.

Decisions Made

On the agenda for the next GitLab key review is a proposal to break up this meeting into four department key reviews. On the security front, we have seen a significant increase in the number of incidents over the last 18 months. There are a number of things that we're going to do to improve the performance of the database layer.

Action Items

On the agenda for the next GitLab key review is a proposal to break up this meeting into four department key reviews. On the security front, we have seen a significant increase in the number of incidents over the last 18 months. There are a number of things that we're going to do to improve the performance of the database layer.

- **Groq Model:** The **Groq model** provided a noticeable improvement in summarizing the meeting's key points, decisions, and action items without redundancy. The Groq-generated summaries were clear, concise, and effectively organized:
 - **Key Points:** The model focused on summarizing the main topics of the meeting, like the proposal for department key reviews, and the community contributions measurement system, without repetition. It provided a clear differentiation between the various points discussed.
 - **Decisions Made:** The Groq model successfully identified and summarized the decisions made in the meeting, including the change to track the percentage of MRs from the community and the proposal for rotating departmental reviews. Unlike the Hugging Face models, there was no redundancy, and each decision was placed in the appropriate section.
 - **Action Items:** Action items generated by Groq, such as addressing database performance and updating defect tracking mechanisms, were distinct and did not

overlap with Key Points or Decisions Made. The output was structured in a way that made it easy to distinguish between what had been discussed and what needed to be done.

Output received from Groq Model:

Meeting Summary

1. Detailed Summary of the Meeting

The meeting, held on February 18, 2021, was an engineering key review at GitLab. The primary agenda items included a proposal to break up the engineering key review into four departmental key reviews for development, quality, security, and UX infrastructure and support. This proposal aimed to increase visibility, objectivity, and allow more focus on new markets by potentially reducing the frequency of these comprehensive reviews.

Another significant discussion point was the R&D overall MR (Merge Request) rate and the R&D wider MR rate. The team identified a potential issue with the current measurement, suggesting that the "wider" MR rate, which includes community contributions, might not be the most effective metric. Instead, they proposed tracking the percentage of total MRs that come from the community over time to better understand community engagement and contribution trends.

The team also touched upon the Postgres replication issue, acknowledging the need for a dedicated host for data engineering to improve replication efficiency and reduce lag. Additionally, there were discussions on defect tracking and SLO (Service Level Objective) achievements, focusing on improving the measurement of open bugs and their ages to get a clearer picture of the backlog and the effectiveness of the current processes.

Lastly, the meeting covered various metrics updates, including the narrow MR rate, which was noted to be significantly below target, and the importance of focusing on quality, security, and availability alongside productivity.

2. Key Points Discussed

- **Breaking up the engineering key review**: Proposing to split the review into departmental key reviews for better focus and efficiency.
- **R&D MR rates**: Discussing the effectiveness of current metrics and proposing an alternative to track community contributions more accurately.
- **Postgres replication issue**: Addressing the need for a dedicated host to improve data engineering efficiency.
- **Defect tracking and SLOs**: Improving the measurement of open bugs and their ages for a better understanding of the backlog.
- **Metrics updates**: Discussing the narrow MR rate and the importance of balancing productivity with quality, security, and availability.

3. Decisions Made

- **Implementation of departmental key reviews**: The team decided to proceed with the proposal to break up the engineering key review into departmental reviews on a rotational basis.
- **Change in tracking community contributions**: Decided to track the percentage of total MRs that come from the community over time instead of the current "wider" MR rate.
- **Addressing Postgres replication**: Decided to prioritize getting a handle on the replication lag issue, potentially through a dedicated host for data engineering.
- **Improvement in defect tracking**: Agreed to focus on measuring the age of all open bugs and the percentage of bugs within SLOs for a more comprehensive view of defect management.

4. Action Items

- **Lily and Max**: Work on transitioning the tracking of community contributions to the proposed percentage of total MRs from the community.
- **Data Engineering Team**: Focus on resolving the Postgres replication issue, potentially by setting up a dedicated host.
- **Relevant Teams**: Implement changes in defect tracking to measure open bug ages and percentages within SLOs.
- **Craig and Team**: Investigate the spike in meantime to close for S2 bugs and provide insights on potential causes and solutions.
- **Christopher**: Follow up on the narrow MR rate and provide context on its current status and expected rebound.
- **Team**: Generally, to keep an eye on metrics, especially those related to quality, security, and availability, and work towards improving them while maintaining productivity levels.


The project demonstrated the potential of NLP models to automate meeting transcription and summarization, but also highlighted the challenges of achieving clean and organized output, particularly with the Hugging Face models. The **Groq model** showed significant promise, providing a more effective and efficient summarization process with minimal need for post-processing. Future iterations of the tool could benefit from incorporating the Groq model more extensively and fine-tuning the Hugging Face models for better differentiation and organization in meeting summaries.

7.3 Streamlit Deployment

Upload Audio/Video:

Meeting Transcription and Summarization Tool

Upload your audio or video file

 Drag and drop file here
Limit 200MB per file • MP3, WAV, MP4, M4A, MPEG4

Browse files

Select the Groq Model


llama-3.3-70b-versatile

Start Process


Transcription Started:

Meeting Transcription and Summarization Tool

Upload your audio or video file

 Drag and drop file here
Limit 200MB per file • MP3, WAV, MP4, M4A, MPEG4

Browse files

 meeting2.mp3 22.3MB ×

Select the Groq Model

llama-3.3-70b-versatile

Start Process

File uploaded successfully!

Starting transcription...

Final Output:

Key Points

```
▼ [ 📄]
0 : "The key points from the meeting are:"
1 : ""
2 :
"1. **Proposal to break up the engineering meeting into four department key
reviews**": The proposal is to split the meeting into four separate reviews for
Development, Quality, Security, and UX Infrastructure and Support. This is to
increase visibility, objectivity, and allow for more focused discussions."
3 : "" 📄
4 :
"2. **R&D MR rate discussion**": The team discusses the R&D MR rate, which
includes both internal and external MRs. They decide to simplify the metric by
tracking the percentage of total MRs that come from the community over time."
5 : ""
6 :
"3. **Postgres replication issue**": The team discusses the postgres replication
issue and assigns the Data Engineering team as the DRI (Directly Responsible
Individual) to resolve the issue. They plan to create a dedicated host for the
data team to pull from and explore database tuning improvements."
7 : ""
```

Decisions Made

```
▼ [
0 : "Here are the decisions made during the meeting:"
1 : ""
2 :
"1. **Breaking up the engineering key review meeting**": The proposal to break
up the meeting into four department key reviews (Development, Quality,
Security, and UX Infrastructure and Support) was discussed and agreed upon. A
two-month rotation was proposed to avoid adding three new meetings to
stakeholders' counters."
3 :
"2. **Changing the R&D MR rate KPI**": The team decided to replace the R&D wider
MR rate KPI with a new metric that tracks the percentage of total MRs that come
from the community over time. This change aims to simplify the current complex
taxonomy and provide a clearer picture of community contributions."
4 :
"3. **Postgres replication issue**": The team discussed the postgres replication
issue and assigned the Data Engineering team as the DRI (Directly Responsible
Individual) to focus on resolving the issue. They also planned to create a
dedicated host for the data team to pull from and explore database tuning
improvements."
5 :
```