Quillio

Your personal meeting assistant

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Problem Statement

Note-taking is a standard procedure when participating in lectures, meetings, and study sessions alike, but it's very easy to leave out a sentence or to miss out on key details. Quillio makes note of this common problem, and provides a service of transcribing audio from your meeting, parsing the contents, and generating a neat summary based on the main points of your meeting. While there are services currently in place that allow for group contribution in real time, such as Google Docs, none utilize hands-free recording, language processing, and summary technologies to create a comprehensive recap of any meeting.

Background Information

Audience

Meetings are a quintessential part of every productive business cycle. Regardless of the field, environment, or context in which you work, discussion serves as an irreplaceable tool in exchanging knowledge and managing information. However, it is difficult to assume that every member or attendee will absorb the entirety of every meeting. In a professional setting, Quillio will not only serve users that want a full transcript of their meeting for their records, but it will also support customers that want to assist their employees with a tool to keep track of their meetings in a physical, summarized, written form. Quillio can also be utilized in academic settings to help students track their group study sessions. Transcription and summary services will build upon their personal notes.

The "user" audience will mainly be composed of individual professionals or students need assistance with organization, archiving, and summarization of their meetings.

The "customer" audience is designed to cater to large corporations that aim to distribute Quillio to their employees in order to improve comprehension of meeting topics and to monitor meeting participation.

Similar Applications and their Limitations

Applications created to manage group meetings and document contributions, such as Google Docs, Google Hangouts, Evernote, and OneNote, allow for multiple people involved in a meeting or study group to write down their thoughts real time. In these group settings, it is very easy for important details to be lost and forgotten, not interpreted correctly, or become overshadowed unintentionally. Our product will relieve the pressure of absorbing every single detail during the meeting by transcribing and summarizing meetings automatically and conveniently.

Currently, there are no applications that will fully transcribe meetings nor automatically create concise meeting notes. The applications listed in the above section highlight features involving live group editing, provide solutions for those looking to sync their files among multiple platforms, easy note formatting and organization, and other student-friendly add ons. The goal of Quillio is to give users a similar platform to each of the previously described and to enhance their experience with automated transcription and summarization. Quillio will fix heavy handedness in dealing with adding heavy formulas, charts, and graphics to notes, losing important details in fast pace meeting environments, and dealing with heavy weight software downloads.

Functional Requirements

As a user...

1. I would like to be able to create an account in Quillio.
2. I would like to be able to create a new meeting directory
3. I would like to add colleagues/academic peers to access a meeting directory.
4. I would like to be able to invite peers to use Quillio if they do not already have an account.
5. I would like my meetings to be recorded and transcribed.
6. I would like my meeting transcriptions to be emailed to all members of the meeting.
7. I would like my meeting transcripts to be summarized with meeting highlights.
8. I would like my summaries to have rich text media and hyperlinks to team artifacts (if time allows).
9. I would like my meetings to be tagged based on meeting topics.
10. I would like to search meetings I have access to based on tags.
11. I would like to be able to access my meeting transcriptions and summaries in a web application.
12. I would like to be able to edit my meeting transcriptions and summaries.
13. I would like to share my meeting transcriptions and summaries with others.
14. I would like to view topics covered in the meeting based on predefined agenda.
15. I would like to create a specialized group, for recurring meeting team figures.

16. I would like to provide some set objectives and agenda points before my meeting.
17. I would like said objectives to be analyzed with the transcripts after the meeting.
18. I would like to be notified if all objectives were covered in a given meeting.
19. I would like to specify a new meeting directory as professional or academic in nature (if time allows).
20. I would like to create a reusable group for recurring meetings.
21. I would like to see my transcripts get better/more accurate the more I use the service (if time allows).
22. I would like to see my transcripts be developed as the meetings is happening (if time allows).
23. I would like to be able to upload a pre-recorded audio file to be turned into a transcript.
24. I would like to have a clean user interface to see my organized meetings.
25. I would like to have a user-friendly design that will let me efficiently navigate my meetings/workspace.

As a member of a meeting group...

1. I would like to be able to use Quillio for meetings for my company or my schoolwork.
2. In a corporate setting, I would like people in my company to be able to share meeting notes with their peers and superiors.
3. In a corporate setting, I would like supervisors to be able to access transcriptions and summaries of the supervisor's employees.
4. I would like to track user contribution to each meeting.
5. I would like to view meeting productivity analytics.
6. I would like to be able to delegate an admin position to an individual in a given group.
7. I would like to be able to reference meeting notes in presentations.
8. In an academic setting, I would like to be able to mark summary notes up based on their validity and relative importance after the automated summarization.
9. I would like to schedule recurring meetings to my preferred calendar service straight from quillio.

As a developer…

1. I would like an organized work-flow that encourages team collaboration on all ends.
2. I would like to be able to track issues that are currently facing the development of the service.
3. I would like to see individual contributions to the project.
4. I would like to convert an audio file of speech to text
5. I would like to convert a stream of audio being sent to a program to text
6. I would like to groom converted speech to text and remove any unreadable language.
7. I would like to tag important keywords in a given transcript of text.

8. I would like to distinguish between speakers in a given audio file of speech.
9. I would like to train the NLP to get better the more recordings there are.
10. I would like to see certain usage/user statistics that help aid development.
11. I would like to securely store the users' information.
12. I would like to produce thorough documentation at each step in the development process.

Non-Functional Requirements

Architecture and Performance

We plan to develop the product as a web application using React, powered by a backend written in Flask. Python will allow us to write simple, elegant server side code while also utilizing the power of Sphinx which will handle the Speech to text parsing. The NLP (Natural Language Processing) will be handled by Google Cloud Natural Language API, which is absolutely crucial to Quillio. Machine learning in Python is heavily supported with dozens of libraries for training our own models. For deployment, we will be using Heroku because of its ease of use and the ability to rapidly adopt a micro-services architecture if the need arises.

Security

As this product could be used in a corporate setting, we must ensure security for user data. Authentication and protection against common security threats will be handled by stable and mature libraries. We plan to use a pre-trained model and restrict learning from corporate users who would like to keep their data isolated and secure.

Scalability

Heroku has a lot of out-of-the-box functionality for us to handle load balancing and scaling of instances. The key challenge we will face is scaling the computationally intensive processes of uploading audio files, making external API calls, and running our summarization model. These tasks will have to be scheduled and processed in background, which is why we chose heroku to deploy multiple modularized components of our application to handle these tasks individually.