News Synthesizer

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**1. Project Definition** –

Our proposal is a program that will allow a user to choose a variety of news websites and topics that interest them. The articles are sourced from Perigon which is an API that gets up-to-date news articles which are then individually fed into ChatGPT to summarize that text. All of the summary texts are combined in a logical way with section headers and titles. The generated text is fed into Festival speech synthesis system which outputs an audio file. The program accepts news topics as input and outputs an audio file that contains summaries of relevant news articles. The purpose of this program would be to help commuters keep up-to-date on current news with the added benefit of assisting the visually impaired population. An automatically generated news podcast is the next step in gaining individualized value during commutes.

**2. Project Requirements** – *Group responsibility nick matt juan*

* Functional

The functional requirements of our application will begin with the GUI which allows a user to interact with a mouse and keyboard to choose amoung various options displayed. Options will include a list of news topics and a way to prioritize them. A user will also be able to select preferable news outlets to filter out unwanted sources. Regarding the audio output, a user can select length of time and text-to-speech options (voice, speech rate, pitch). The default output directory can be changed by the user before the audio file is generated.

* Usability
  + User interface-

Our user interfaces will be a multitude of prompts that ask the user questions from how long they have to listen to what they want to listen to. One of the two most important questions we will ask the user is how long they want it to be. This will most likely be a drop-down menu ranging from 5 minutes to an hour in increments of 5 minutes. The second question will ask what they want their (podcast) to be populated with. The user will be given several options such as sports, news, politics, science, and so on. They will be asked to select them in order of importance because the podcast will be organized as such. Some other smaller options may include voice, whether male or female, different accents, or how quickly they talk.

* + Performance-

The performance will be mostly reliant on internet speed which impacts the speed at which perigon can access the web to return news articles to the user. Then the next bit of performance will rely on how quickly ChatGPT can summarize the information, relying on the internet and their owner servers for processing power. The final step is primarily CPU based to convert a text file into a .wav sound file. Although a slower CPU may impact performance, we are not expecting the impact to be very major.

* System

The application is designed to run locally on computer devices. Due to the portability of C++ the application can be adapted to multiple platforms and systems.

There are four key software components required in order for the app to function properly. The first requirement is an API that can gather news articles from various sources based on the users' desired topics. This API will be used to retrieve the content of the articles. An AI-based summarization tool is also required so that the app can take the content of the news articles and condense them into shorter, more concise summaries. Another requirement is a program that can turn text to speech in order for the app to convert the summarized articles into an audio file. Finally, software for GUI development is required to create the user interface for the app.

The app does not require a database, so there is no need to worry about setting up or maintaining a database server.

* Security

Security concerns are limited to poor code quality which will be addressed by peer-review before deployment. There will be no database or sensitive data exposure because the application will run locally and only access the internet for API requests. The security risk of using private API keys are placed on the individual user, whom are expected not to share or expose keys to any other parties.

**3. Project Specification** – *Group responsibility rigo nish*

* Focus / Domain / Area
* Libraries / Frameworks / Development Environment
  + Festival
    - Festival is a speech synthesis system that offers a framework for building speech synthesis systems and includes examples of various modules.
* Platform (Mobile, Desktop, Gaming, Etc)
  + Mobile
* Genre (Game, Application, etc)

**4. System – Design Perspective** – *Group responsibility*

* Identify subsystems – design point of view
  + Illustrate with class, use-case, UML, sequence ..... diagrams
  + Design choices (Optional)
* Sub-System Communication (Diagram and Description)
  + Controls
  + I/O
  + DataFlow
* Entity Relationship Model (E-R Model)
  + Example - [https://en.wikipedia.org/wiki/Entity%E2%80%93relationship\_model](https://en.wikipedia.org/wiki/Entity–relationship_model)
* Overall operation - System Model
  + Simplified Sub-system to System interaction

**5. System – Analysis Perspective** – *Group responsibility*

* Identify subsystems – analysis point of view
* System (Tables and Description)
  + Data analysis
    - Data dictionary (Table - Name, Data Type, Description)
  + Process models
* Algorithm Analysis
  + Big - O analysis of overall System and Sub-Systems

**6. Project Scrum Report -** *Group Responsibility*

* Product Backlog (Table / Diagram)
* Sprint Backlog (Table / Diagram)
* Burndown Chart

**7. Subsystems**

**7.1 Subsystem 1** – Name 1 - *Individual responsibility*

* Initial design and model
  + Illustrate with class, use-case, UML, sequence ..... diagrams
  + Design choices
* Data dictionary
* If refined (changed over the course of project)
  + Reason for refinement (Pro versus Con)
  + Changes from initial model
  + Refined model analysis
  + Refined design (Diagram and Description)
* Scrum Backlog (Product and Sprint - Link to Section 6)
* Coding
  + Approach (Functional, OOP)
  + Language
* User training
  + Training / User manual (needed for final report)
* Testing

**7.2 Subsystem 2** – Name 2 - *Individual responsibility*

* Initial design and model
  + Illustrate with class, use-case, UML, sequence ..... diagrams
  + Design choices
* Data dictionary
* If refined (changed over the course of project)
  + Reason for refinement (Pro versus Con)
  + Changes from initial model
  + Refined model analysis
  + Refined design (Diagram and Description)
* Scrum Backlog (Product and Sprint - Link to Section 6)
* Coding
  + Approach (Functional, OOP)
  + Language
* User training
  + Training / User manual (needed for final report)
* Testing

**7.3 Subsystem 3** – Name 3 - *Individual responsibility*

* Initial design and model
  + Illustrate with class, use-case, UML, sequence ..... diagrams
  + Design choices
* Data dictionary
* If refined (changed over the course of project)
  + Reason for refinement (Pro versus Con)
  + Changes from initial model
  + Refined model analysis
  + Refined design (Diagram and Description)
* Scrum Backlog (Product and Sprint - Link to Section 6)
* Coding
  + Approach (Functional, OOP)
  + Language
* User training
  + Training / User manual (needed for final report)
* Testing

**7.4 Subsystem 4** – Name 4 - *Individual responsibility*

* Initial design and model
  + Illustrate with class, use-case, UML, sequence ..... diagrams
  + Design choices
* Data dictionary
* If refined (changed over the course of project)
  + Reason for refinement (Pro versus Con)
  + Changes from initial model
  + Refined model analysis
  + Refined design (Diagram and Description)
* Scrum Backlog (Product and Sprint - Link to Section 6)
* Coding
  + Approach (Functional, OOP)
  + Language
* User training
  + Training / User manual (needed for final report)
* Testing

**8. Complete System** – *Group responsibility*

* Final software/hardware product
* Source code and user manual – screenshots as needed - Technical report
  + Github Link
* Evaluation by client and instructor
* Team Member Descriptions

***This is just a guide, and use it to create/improve your report. Feel free to add sections. You are responsible for your own subsystem/s, not other members. You have to contribute to the team’s goals and objectives, and develop your subsystem/s, write your documents and slides.***