Form 2: Literature Documents

1. Team No: 06

2. Project Title: A Neural Network-Based Voice Dialogue System for Email Management

3. Problem Statement

Introduction: The current landscape of email management systems presents significant obstacles for visually impaired individuals. These systems heavily rely on visual interfaces, rendering them inaccessible for blind users. The lack of efficient accessibility features exacerbates communication challenges, hindering effective email handling.

Existing Method(s) Disadvantages: Existing email management systems for visually impaired individuals faced several challenges, including dependency on visual interfaces, lack of language translation features, and inefficient accessibility tools, such as screen readers and basic keyboard shortcuts.

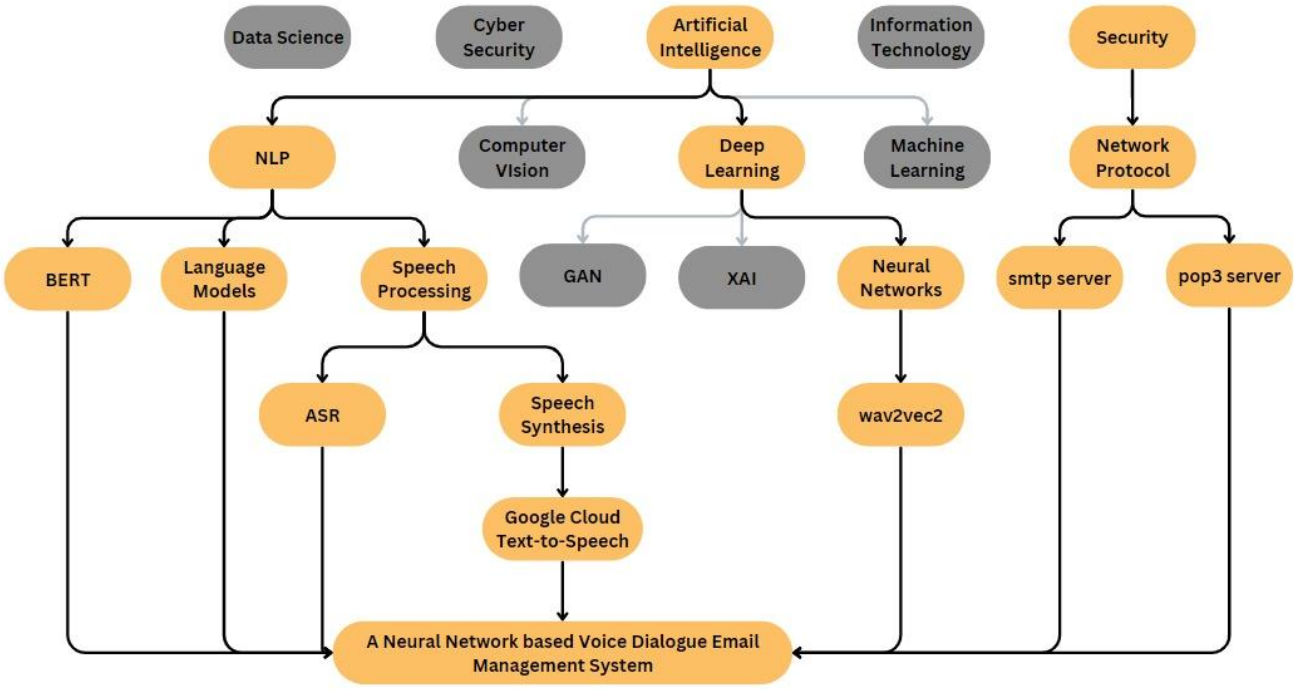
Problem Addressed in Your Project: To address these limitations, we developed, an email manager that leverages Transformers Neural Network, Python, and Google Cloud Services. The system aims to enhance usability, provide voice-based interaction, and overcome the drawbacks of existing solutions. By utilizing TTS for voice interaction, Gmail API for email retrieval, composition, and organization, and Cloud Storage for storing user preferences and data securely, this seeks to revolutionize email management for the visually impaired.

4. Problem Illustration:

email management systems for visually impaired individuals faced several challenges. These systems relied heavily on visual interfaces, making them inaccessible for blind users. In addition, they lacked efficient accessibility features, such as screen readers and basic keyboard shortcuts, hindering effective communication as:

1. User Input: The user interacts with the system using voice commands.
2. Text-to-Speech (TTS): The system converts text to speech using Google's TTS API.
3. Gmail API: The system interacts with Gmail API to retrieve, compose, and organize emails.
4. Cloud Storage: User preferences and data are stored securely in Cloud Storage.
5. Voice Interaction: The system prompts the user with voice commands to perform certain actions.
6. Customization: Users can customize the system to their preferences.
7. Efficient Navigation: The system eliminates the need for keyboard input, allowing users to navigate emails using voice commands and mouse clicks.
8. Email Management: Users can read, compose, and organize emails efficiently using the voice-based interface

5 .Concept Tree



6. Comparison of Existing Strategies for Problem solve

Sl.No	Strategies	Advantages	Disadvantages
1.	Basic Email Management	Reduces cognitive load for visually impaired users. - Simple mouse-based interaction.	Limited capabilities, requires more user effort, not for blind persons
2.	Voice-activated Email Management with Single Action at a Time	Simple and user-friendly single-action interaction. - Standard protocols for email access.	Limited capabilities compared to modern methods. - Potentially requires training for voice commands.
3.	Accessible Email Management	Accessible to diverse users: visually impaired, illiterate, new users. - Step-by-step voice guidance	Limited functionality compared to modern methods. - Might require user adaptation to voice prompts

7. Comparison of Existing Method from selected Strategies

Sl.No	Author	Method	Advantages	Disadvantages
1.	(2016) - Ingle, P., Kanade, H., Lanke, A., & Choche, M.	Speech-to-Text (STT), Text-to-Speech (TTS), Interactive Voice Response (IVR)	Reduces cognitive load for visually impaired users. - Simple mouse-based interaction	Limited capabilities, requires more user effort, not for blind persons
2.	(2020) - Sharma, B., Roshan, B., Gaur, M., & De, P	Speech recognition, Text-to-Speech, IMAP, SMTP	Simple and user-friendly single-action interaction. - Standard protocols for email access.	Limited capabilities compared to modern methods. - Potentially requires training for voice commands.
3.	(2021) - Kumar, S., Yogitha, R., & Aishwarya, R..	Text-to-Speech, Speech-to-Text (Python libraries), IVR	Accessible to diverse users: visually impaired, illiterate, new users. - Step-by-step voice guidance	Limited functionality compared to modern methods. - Might require user adaptation to voice prompts

8. References :

[1] Ingle, P., Kanade, H., Lanke, A., & Choche, M. (2016). An email architecture for visually impaired people using TTS, STT conversions and IVR technologies. International Journal of Computer Applications, 97(1), 32-38.

[2] Sharma, B., Roshan, B., Gaur, M., & De, P. (2020). Voice-activated email management system with single action at a time. International Journal of Advanced Research in Computer Science, 11(8), 52-58.

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[3] Kumar, S., Yogitha, R., & Aishwarya, R. (2021). An accessible email management system for all users using interactive voice response. International Journal of Innovative Technology and Exploring Engineering, 10(7), 521-525.

[4] S Tripathi, Nidhi Kushwaha and Puneet Shukla, "Voice based email system for visually impaired and differently abled", International Journal of Engineering Research & Technology (IJERT), vol. 8, no. 07, July 2019.

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[6] Pallavi Tyagi, Tanishka Sharma, Mayank Mittal and Ankit Kumar, "Voice based Email for Physically Challenged", International Research Journal of Engineering and Technology (IRJET), vol. 7, no. 05, May 2020.

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