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MannMitra-A Voice for introverts

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Abstract :

The increasing academic pressure and communication barriers faced by students highlight the need for intelligent and accessible student support systems. This paper presents MannMitra, an AI-powered and Internet of Things (IoT)-based interactive student support system designed to facilitate voice-based communication, personalized assistance, and situation-aware support. The proposed system integrates speech recognition, Natural Language Processing (NLP), and Artificial Intelligence to understand user queries and generate contextually relevant responses. It aims to provide an interactive environment where students can discuss academic difficulties, everyday challenges, and personal concerns in a comfortable and user-friendly manner. The system also incorporates emotion and situation analysis to identify potential concerns from user interactions and initiate trusted contact notifications when predefined risk conditions are detected. IoT-enabled hardware provides a dedicated interface for interaction, reducing dependence on conventional mobile applications. The proposed approach aims to improve accessibility, encourage communication, and facilitate timely support for students. MannMitra represents a potential application of AI and IoT technologies in developing intelligent, responsive, and student-centered support systems. However, its effectiveness in emotion recognition, contextual understanding, and risk detection requires systematic evaluation through practical implementation and experimental validation.

Keywords— Artificial Intelligence, Internet of Things (IoT), Natural Language Processing, Speech Recognition, Emotion Analysis, Student Support System, Voice Interaction, Trusted Contact Alert.

I. INTRODUCTION

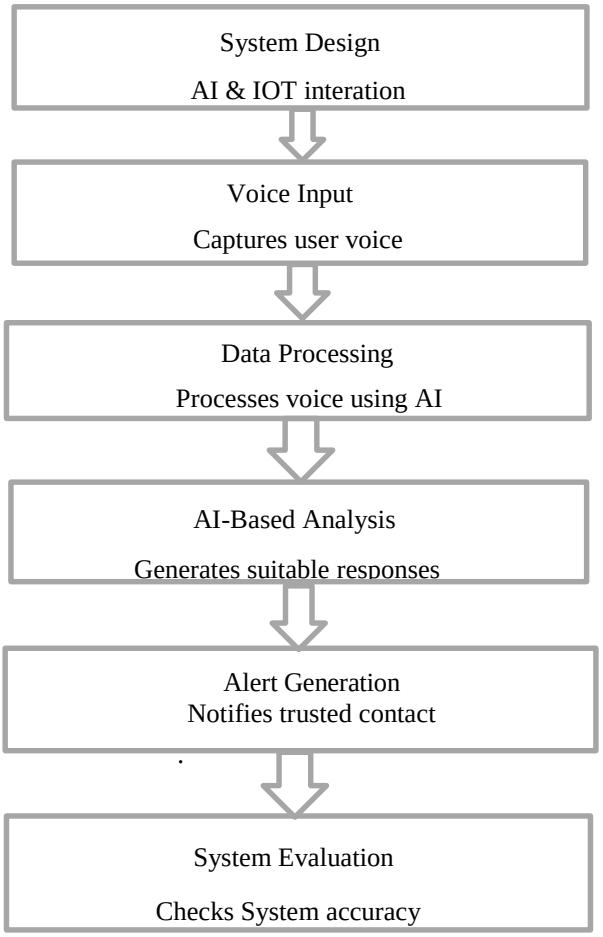
Artificial Intelligence (AI) and the Internet of Things (IoT) are transforming the development of intelligent and interactive systems. Students often face academic pressure and communication difficulties that may prevent them from expressing their concerns openly. To address this challenge, MannMitra is proposed as an AI-powered and IoT-based student support system that provides voice-based interaction, learning assistance, and situation-aware support. The system uses speech recognition and Natural Language Processing (NLP) to understand user input and generate relevant responses. It also aims to identify potential concerns and notify trusted contacts when predefined risk conditions are detected. Through a dedicated, compact hardware interface, MannMitra aims to provide accessible, friendly, and intelligent support.

II. METHODOLOGY

The methodology focuses on developing an AI-powered and IoT-based student support system named MannMitra. The proposed system follows these steps:

1. Voice Input: The user's voice is captured through a microphone to understand their queries, problems, and concerns.
2. Speech Processing: Speech-to-Text technology converts the user's voice into text for further processing.
3. AI-Based Analysis: Artificial Intelligence (AI) and Natural Language Processing (NLP) analyze the input and generate suitable responses based on the user's query.
4. Proposed System Design: A compact hardware model integrates a microphone, speaker, microcontroller, and connectivity components to support voice interaction.
5. Situation Analysis and Alert: The system aims to identify potential risks and notify trusted contacts, such as parents or guardians, when predefined risk conditions are detected.
6. Challenge Identification: Key challenges, including response accuracy, voice recognition, privacy, internet connectivity, and reliable risk detection, are considered for future development and testing.

III. MODELING AND ANALYSIS



V. CONCLUSION

MannMitra is an AI-powered and IoT-based student support system that provides voice interaction, learning assistance, and personalized responses. It aims to help students express their concerns comfortably and connect with trusted contacts when needed. The system combines AI and IoT technologies to provide accessible and friendly support. In the future, it can be enhanced with improved emotion detection, multilingual communication, and advanced safety features.

VI. REFERENCES

[1] "Artificial Intelligence-Based Student Support Systems: A Review of Current Approaches," Research Paper.
[2] "Natural Language Processing and Speech Recognition for Human-Computer Interaction," Research Paper.
[3] "AI-Based Emotion Recognition and Analysis Using Machine Learning," Research Paper.
[4] "Internet of Things (IoT)-Based Smart Systems and Applications," IEEE Research Paper.
[5] "Intelligent Virtual Assistants for Student Support and Well-Being," Research Paper.

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