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Research Paper

MEDIASSIST GENAI:INTELLIGENT FIRST AID AND EMERGENCY RESPONSE ASSISTANT

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ABSTRACT

MediAssist GenAI: Intelligent First Aid and Emergency Response Assistant is an AI-powered healthcare support system designed to provide quick, accessible, and understandable first-aid guidance during urgent situations. During an emergency, people may become confused or may not know what immediate steps are appropriate. The system aims to provide structured guidance while encouraging users to seek professional medical assistance when required.

The proposed system accepts user descriptions of an emergency situation through text or voice input. A Generative AI and Natural Language Processing (NLP) module analyzes the information to identify the general type of emergency, such as minor injuries, burns, bleeding, fainting, choking, or other urgent situations. Based on the available information, the system provides carefully structured first-aid guidance and highlights actions that should be avoided.

MediAssist GenAI also includes an emergency-severity assessment component that categorizes situations into appropriate urgency levels based on the information provided. When potentially life-threatening symptoms are described, the system prioritizes contacting local emergency services or seeking immediate professional medical assistance instead of providing lengthy self-care instructions.

The system presents guidance through a simple conversational interface so that users can follow instructions step by step. It can provide emergency reminders, safety precautions, important warning signs, and escalation guidance. Voice interaction can make the system more accessible when users have difficulty typing during stressful situations.

Overall, MediAssist GenAI is intended to act as an informational first-aid support assistant rather than a replacement for doctors, paramedics, or emergency services. The system can improve access to basic emergency information and help users respond more calmly while professional assistance is being obtained. Future enhancements can include multilingual support, speech interaction, verified medical knowledge integration, location-based emergency-service assistance, wearable-device integration, and continuous safety evaluation.

I. INTRODUCTION

Medical emergencies can occur unexpectedly at home, at work, while travelling, or in public places. During such situations, immediate and appropriate action can be important while professional medical assistance is being arranged. However, people may not know what first-aid steps are suitable for a particular situation or may become confused under stress.

Traditional first-aid information is available through books, websites, mobile applications, emergency guides, and educational programs. Although these resources can be useful, searching through large amounts of information during an emergency may be difficult. Users may need a simple interface that presents relevant information in a structured and understandable manner.

Recent developments in Artificial Intelligence and Generative AI have created opportunities for conversational healthcare-support applications. Natural Language Processing can help systems understand descriptions written in everyday language, while language models can generate conversational responses. However, medical AI systems require strong safety controls because incorrect or misleading information can cause harm.

The **MediAssist GenAI** system is designed to provide structured first-aid information based on the user's description of an incident. The system analyzes the input, identifies potentially relevant emergency categories, evaluates urgency using predefined safety rules, and provides appropriate general guidance. When severe warning signs are detected, the system emphasizes immediate professional assistance.

The main objective of the system is to make basic first-aid information easier to access during urgent situations. It is designed as a **support and information system**, not as an autonomous medical diagnosis or treatment system. Professional emergency services and qualified healthcare providers should always take priority when a serious or uncertain medical condition is suspected.

II. LITERATURE SURVEY

Traditional first-aid systems provide educational information about injuries, emergencies, and basic response procedures. First-aid manuals and training programs teach people how to respond to common emergencies before professional medical help arrives. However, these resources are generally static and may not provide personalized conversational interaction.

Mobile healthcare applications have introduced digital methods for accessing medical information and emergency guidance. Such applications can provide symptom information, emergency contacts, medication reminders, and health resources. However, the quality and reliability of information can vary, and users may find it difficult to determine which information is relevant during an emergency.

Natural Language Processing has been increasingly used in healthcare applications to understand patient questions and descriptions. NLP systems can extract important concepts from natural-language input and classify user queries into relevant categories. Such technologies can improve the usability of healthcare-support applications but require careful validation for medical contexts.

Generative AI and large language models have expanded the capabilities of conversational assistants. These systems can summarize information, answer questions, and provide conversational explanations. In healthcare, however, generated responses can contain errors or unsupported information, making retrieval from verified sources, safety rules, evaluation, and human oversight important.

Emergency-response technologies have also explored automated triage and decision-support approaches. Rule-based systems can identify critical warning signs and prioritize emergency escalation. Combining deterministic safety rules with AI-based language understanding can provide a safer architecture than relying only on free-form generated responses.

Existing research demonstrates the potential of AI, NLP, conversational systems, and digital health technologies for improving access to health information. However, emergency first-aid systems require additional safeguards for uncertainty, high-risk situations, response accuracy, privacy, and escalation. **MediAssist GenAI** combines conversational AI with verified knowledge, emergency-priority rules, structured guidance, safety checks, and professional-care escalation to create a safer first-aid information-support platform.

III. SYSTEM ANALYSIS

The **MediAssist GenAI** system is designed to provide accessible first-aid information and emergency-response support through an AI-powered conversational interface. The system accepts user descriptions through text or voice input and extracts relevant information from the description. An NLP module processes the input and identifies important emergency-related terms, symptoms, injuries, and circumstances. A situation-classification module categorizes the input into broad first-aid or emergency categories. A safety and urgency engine evaluates predefined warning signs and determines whether immediate professional assistance should be prioritized. The system retrieves relevant information from a verified first-aid knowledge base instead of depending entirely on generated information. A Generative AI module converts the verified information into simple, step-by-step guidance appropriate to the identified situation. Safety rules check the generated response for unsupported, unsafe, or inappropriate recommendations. The system clearly communicates when emergency services or professional medical attention should be contacted. A conversational interface allows users to provide additional information and receive clarification. The system maintains appropriate session information while applying privacy and security controls. Finally, the assistant presents general first-aid guidance, safety warnings, and escalation instructions in an easy-to-follow format.

Existing System

Existing first-aid assistance is commonly provided through printed manuals, emergency websites, educational videos, mobile applications, healthcare portals, and emergency telephone services. These resources contain useful information about injuries, symptoms, and emergency procedures. However, many traditional resources require users to search manually for information that matches their situation. Static resources may not understand a user's description written in everyday language. General search engines may return large amounts of information that can be difficult to evaluate during

stressful situations. Some healthcare applications provide symptom information but may not offer interactive emergency guidance. Systems that rely entirely on generative AI may produce inaccurate or unsupported medical information. Traditional resources may also provide limited voice-based interaction and accessibility features. Emergency escalation may not always be clearly prioritized when serious warning signs are described. Users may therefore have difficulty distinguishing basic first-aid situations from emergencies requiring immediate professional care. These limitations demonstrate the need for a carefully designed, safety-focused conversational first-aid information system.

Disadvantages of Existing System

- Static first-aid information can be difficult to search during emergencies.
- Information may be spread across multiple resources.
- Limited conversational interaction.
- Limited voice-based accessibility.
- General search results may contain irrelevant information.
- Users may have difficulty judging information reliability.
- Some AI systems may generate unsupported medical information.
- Limited emergency-priority detection.
- Limited structured step-by-step guidance.
- Emergency escalation may not be sufficiently emphasized.
- Manual searching can consume valuable time.
- Different sources may present inconsistent information.

Proposed System

The proposed **MediAssist GenAI** system provides a safety-focused conversational platform for delivering general first-aid information and emergency-response guidance. The system accepts text or voice descriptions from users and uses NLP to understand the reported situation. A classification module identifies the broad type of emergency or first-aid scenario. A deterministic safety engine checks the input for predefined high-risk warning signs and prioritizes emergency escalation when necessary. The system retrieves relevant information from a curated and verified first-aid knowledge base. A Generative AI module transforms the retrieved information into concise and understandable step-by-step guidance. A response-validation layer checks generated content against predefined safety rules before displaying it to the user. The assistant clearly communicates limitations and encourages users to contact emergency services or healthcare professionals when appropriate. The conversational interface allows users to provide additional context without requiring complex navigation. Privacy and access-control mechanisms protect user information. The system maintains a clear distinction between general first-aid information and medical diagnosis or treatment. Overall, the proposed system combines AI convenience with rule-based safety controls and verified knowledge to provide more reliable emergency information support.

Advantages of Proposed System

- Provides quick access to first-aid information.
- Supports natural-language interaction.
- Supports text and voice input.

- Provides structured step-by-step guidance.
- Uses a curated knowledge base.
- Includes emergency-priority safety rules.
- Clearly emphasizes professional medical assistance when required.
- Reduces the need for manual information searching.
- Provides conversational follow-up support.
- Includes response validation and safety checks.
- Improves accessibility of emergency information.
- Supports future multilingual capabilities.

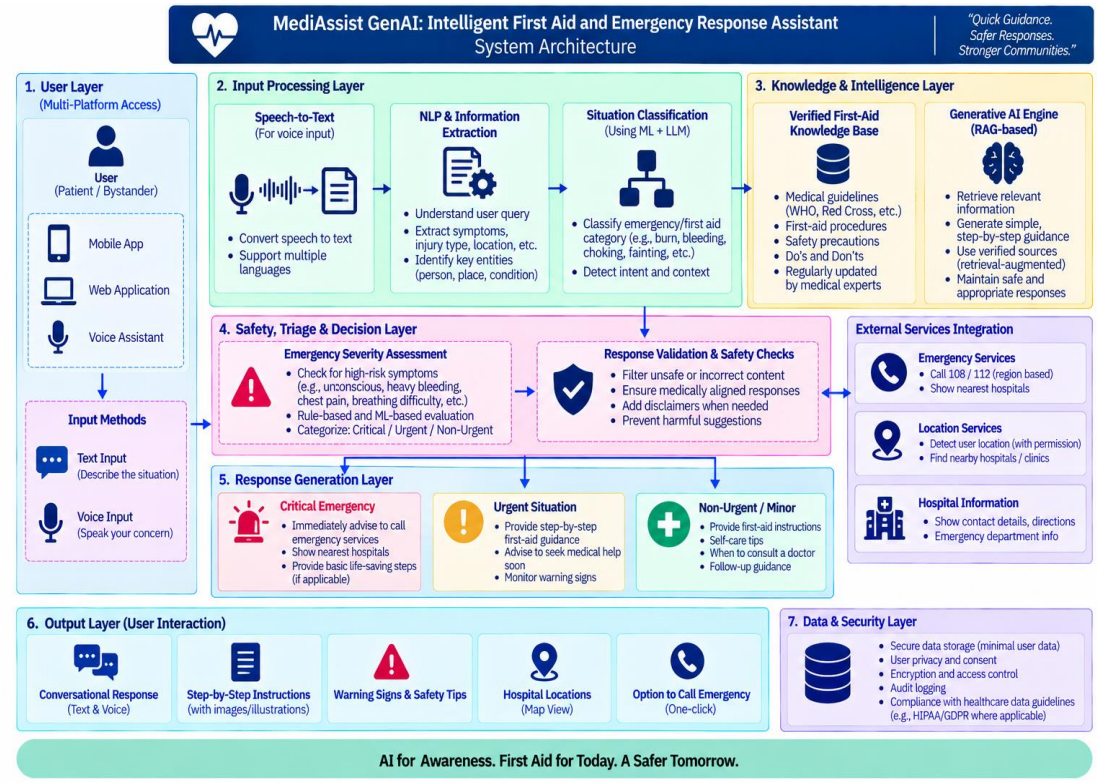
IV. METHODOLOGY

The methodology begins when the user provides an emergency or first-aid situation through text or voice input. For voice input, a speech-recognition module converts the spoken description into text for further processing. The NLP module cleans the input and extracts relevant information such as injury type, reported symptoms, circumstances, and warning signs. A situation-classification module maps the input to an appropriate broad emergency or first-aid category. A deterministic urgency engine checks the information against predefined high-risk conditions and escalation rules. If critical warning signs are detected, the system immediately prioritizes contacting emergency services or obtaining professional medical assistance. For non-critical situations, the system retrieves relevant guidance from a curated and verified first-aid knowledge base. The Generative AI module converts the retrieved information into clear and concise instructions while preserving the verified meaning. A safety-validation layer checks the generated response against medical-safety rules and blocks unsupported or unsafe recommendations. The conversational interface presents the response and allows the user to provide additional information if necessary. The system records only appropriate session information and applies privacy and access-control mechanisms. Finally, the user receives general first-aid information, warning signs, safety precautions, and clear escalation guidance.

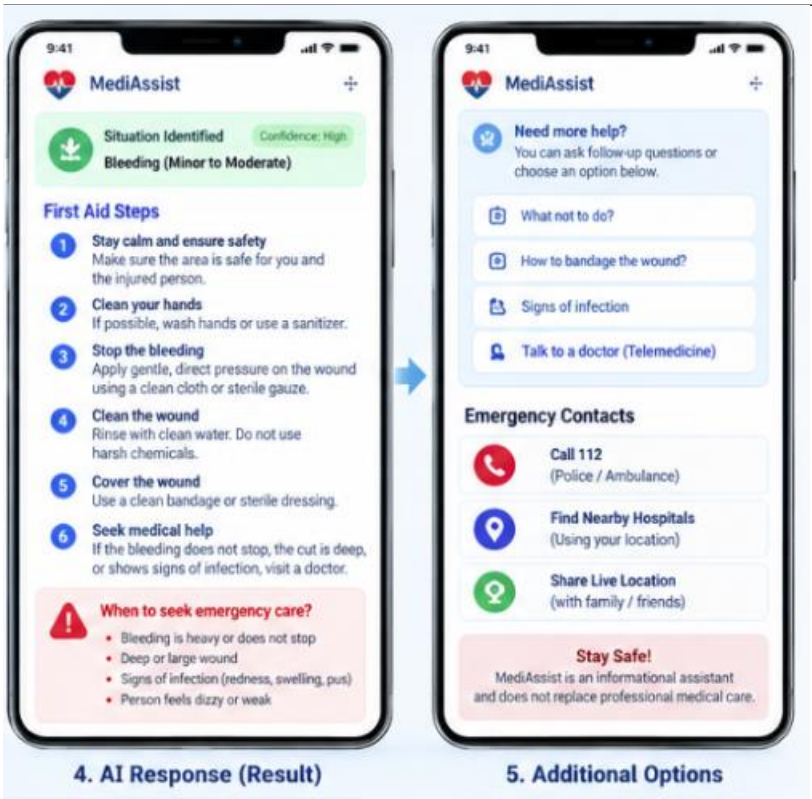
SYSTEM ARCHITECTURE

The MediAssist GenAI architecture consists of multiple layers designed to provide conversational first-aid information while maintaining strong safety controls. The User Interface Layer provides text and voice interaction through a mobile or web application. The Speech-to-Text Module converts voice descriptions into text when voice input is used. The NLP and Information Extraction Layer identifies relevant symptoms, injuries, circumstances, and emergency-related terms from user input. The Situation Classification Module maps the input to broad first-aid or emergency categories. The Emergency Safety and Triage Rules Engine checks predefined warning signs and determines whether immediate professional assistance should be prioritized. The Verified First-Aid Knowledge Base stores approved and reviewed first-aid information. The Retrieval Layer selects relevant information from the knowledge base based on the user's situation. The Generative AI Engine converts retrieved information into understandable conversational guidance. The Response Safety Validator checks the generated response against predefined safety rules and prevents unsupported or unsafe content from being presented. The Emergency Escalation Module provides clear instructions to seek professional or emergency assistance when necessary. Finally, the

Secure Session and Analytics Layer manages appropriate session information, access control, auditing, and system-performance monitoring.



V. RESULT AND OUTPUT



VI. CONCLUSION

The MediAssist GenAI: Intelligent First Aid and Emergency Response Assistant provides an AI-powered platform for delivering quick and accessible first-aid information during emergency situations. The system allows users to describe an incident through text or voice and receive structured, easy-to-understand guidance through a conversational interface.

By combining Natural Language Processing, Generative AI, verified medical knowledge, situation classification, and safety-based decision rules, the system can understand user input and provide relevant first-aid information. The safety layer helps identify potentially serious situations and prioritizes professional medical assistance when critical warning signs are present.

The system improves the accessibility of first-aid information by providing step-by-step instructions, safety precautions, warning signs, and emergency escalation guidance in one platform. It can reduce the time required to search through different resources and help users understand appropriate immediate actions while waiting for professional assistance.

Overall, MediAssist GenAI demonstrates how Generative AI can be used as a supportive tool for emergency information and first-aid awareness. Future enhancements can include multilingual voice support, real-time emergency-service integration, location-based hospital assistance, wearable-device integration, verified medical-content retrieval, personalized accessibility features, and continuous AI safety evaluation.

The system should always be treated as an informational support assistant and not as a replacement for doctors, paramedics, or emergency services. For serious, life-threatening, or uncertain situations, users should seek immediate professional medical assistance. Strong privacy, security, medical-content validation, safety testing, and human oversight are essential for responsible deployment.

REFERENCES

[1] Kumar, R. D., Prudhviraj, G., Vijay, K., Kumar, P. S., & Plugmann, P. (2024). Exploring COVID-19 through intensive investigation with supervised machine learning algorithm. In Handbook of Artificial Intelligence and Wearables (pp. 145-158). CRC Press.

[2] Swathi, B., Vijay, K., Sushanth Babu, M., & Dinesh Kumar, R. (2024, November). Machine Learning Techniques in Cloud Based Intrusion Detection. In The International Conference on Artificial Intelligence and Smart Environment (pp. 557-564). Cham: Springer Nature Switzerland.

[3] Sv satyakrishna, shirisha rangu ,bhargavi nalacheruve.(2024) Prospective investigation on colorectal cancer with SMOTE on machine learning Algorithm

[4] Dr.G.Vishnu Murthy, BhargaviNalacheruve 1Professor, Department of computer Science & engineering, Anurag University, TS, India. 2Student, Department of computer Science & engineering, Anurag University, TS, India.

[5] V. N. S. Manaswini, K. K, C. Nigam, S. S. Ali, R. Niranjana, and Suman, "Real-Time Object Detection in Drone Surveillance Using YOLOv5," in Proc. 2025 3rd Int. Conf. IoT, Communication and Automation Technology (ICICAT), Gorakhpur, India, 2025, pp. 1–6, doi: 10.1109/ICICAT68430.2025.11414670.

[6] B. Soundarya, V. N. S. Manaswini, M. Ayyakrishnan, R. D. Kumar, "Contextual Analysis of Big Data Analytics in Intelligent Transportation Frameworks," in Intersection of Artificial Intelligence, Data Science, and Cutting-Edge Technologies: From Concepts to Applications in Smart Environment, Lecture Notes in Networks and Systems, vol. 1353, Cham: Springer, 2025, doi: 10.1007/978-3-031-88304-0_79.

[7] R. D. Kumar, V. N. S.Manaswini, "Applications of blockchain in smart cities: detecting fake documents from land records using blockchain technology," in Blockchain for Smart Cities, Elsevier, 2021, pp. 105–117, doi: 10.1016/B978-0-12-824446-3.00017-X.

[8] Tejavath Veeramma, Badarla Anil, Guguloth Ravinder, "An advanced movie recommender using collaborative filtering and sentiment analysis," International Research Journal of Modernization in Engineering Technology and Science, vol. 7, no. 7, July 2025, doi: 10.56726/IRJMETS81618.

[9] Ravi Kumar Banoth, Ramana Murthy B V, "Automatic crop recommendation system using LightGBM and decision tree machine learning models," Journal of Machine and Computing, vol. 5, no. 1, pp. 343, Jan. 2025, doi: 10.53759/7669/jmc202505026.

[10] Ravi Kumar Banoth, Dr. B.V. Ramana Murthy, "Smart agriculture through IoT and machine learning for analyzing carbon footprints," in Proc. Int. Conf. Computer Science and Communication Engineering (ICCSCE), Apr. 2025.

[11] Ravi Kumar Banoth, B. V. Ramana Murthy, "Soil image classification using transfer learning approach: MobileNetV2 with CNN," SN Computer Science, vol. 5, art. no. 199, 2024, doi: 10.1007/s42979-023-02500-x.

[12] V. N. S. Manaswini, K. K, C. Nigam, S. S. Ali, R. Niranjana, and Suman, "Real-Time Object Detection in Drone Surveillance Using YOLOv5," in Proc. 2025 3rd Int.

Conf. IoT, Communication and Automation Technology (ICICAT), Gorakhpur, India, 2025, pp. 1–6, doi: 10.1109/ICICAT68430.2025.11414670.
[13] B. Soundarya, V. N. S. Manaswini, M. Ayyakrishnan, R. D. Kumar, "Contextual Analysis of Big Data Analytics in Intelligent Transportation Frameworks," in Intersection of Artificial Intelligence, Data Science, and Cutting-Edge Technologies: From Concepts to Applications in Smart Environment, Lecture Notes in Networks and Systems, vol. 1353, Cham: Springer, 2025, doi: 10.1007/978-3-031-88304-0_79.
[14] R. D. Kumar, V. N. S. Manaswini, "Applications of blockchain in smart cities: detecting fake documents from land records using blockchain technology," in Blockchain for Smart Cities, Elsevier, 2021, pp. 105–117, doi: 10.1016/B978-0-12-824446-3.00017-X.
[15] M. M. Rao, M. B. Mohiuddin, P. Srinu, A. Satyanarayana, J. Madhavan and R. D. Kumar, "Carbon-Neutral-Agriculture: Renewable-Energy Powered IoT Systems and Resource Optimization," *2026 3rd International Conference on Research Methodologies in Knowledge Management, Artificial Intelligence and Telecommunication Engineering (RMKMATE)*, Chennai, India, 2026, pp. 1-6, doi: 10.1109/RMKMATE69073.2026.11518903.
[16] R. Uma, M. Maggidi, A. R. Ekkati, S. Bandlamudi, C. Madugundi and S. K. Taduri, "Zero-Trust Architecture for Hybrid Cloud Security in Critical Infrastructures," 2026 IEEE International Conference for Convergence in Computing Technology (I3CTCON), Lonavala, India, 2026, pp. 1-6, doi: 10.1109/I3CTCON68242.2026.11507458.
[17] VNS Manaswini, Chithanoor Arjun, Yamini Chouhan, & V. Sumalatha. (2026). MB-EFF: A Multi-Branch Environmental Feature Fusion Deep Learning Model for Crop Classification and Recommendation. *International Journal of Computer Information Systems and Industrial Management Applications*, *18*(22s), 460–468. https://doi.org/10.70917/ijcisim-2026-5453
[18] Yamini Chouhan, SIDDOJU DIVYA, VNS Manaswini, & J. Priyanka. (2026). Vision-Threatening Diabetic Retinopathy Detection Using EfficientNetB4: A Two-Stage Transfer Learning Approach. *International Journal of Computer Information Systems and Industrial Management Applications*, *18*(22s), 469–476. https://doi.org/10.70917/ijcisim-2026-5454
[19] Real Time Vehicle Counting and Classification system, **Dr. A.Satyanarayana,et.al** International Research Journal of Moderrnization in Engineering Technology and Science, Vol-06, Issue-05, 2024 **[ISSN: 2582-5208] doi:** 10.56726/IRJMETS57804
[20] Facial Depth Maps: Detecting Sleep Apnea with Deep Learning, **Dr. A.Satyanarayana,et.al** , International Journal of Scientific Development and Research, Vol 9, Issue-5, 2024 **[ISSN: 2455-2631]**
[21] Moodchef: Mood Based Smart Recipe Recommender with cooking Assistance, **Dr. A.Satyanarayana,et.al ,** International Journal of Progressive Research in Engineering Management and Sciences, Vol-05,Issue-7, July 2025 **[ISSN: 2583-5162]** doi: **10.58257/IJPREMS42696**
[22] News Article Text Summarization, **Dr. A.Satyanarayana,et.al,** Journal of Emerging Technologies and Innovative Research, Vol-11, Issue -5, 2024, **[ISSN: 2349-5162]**
[23] Voice Assistant and gesture controlled virtual mouse using Deep learning Techniques, **Dr. A.Satyanarayana,et.al ,** International Research Journal of

Modernnization in Engineering Technology and Science Vol-6, Issue-5, 2024 **[ISSN: 2582-5208] 10.56726/IRJMETS57214**