IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 10, May 2025
Impact Factor: 7.67

Enhancing Education: Creating Informative Podcasts with GEN AI

Mrs. Manisha Navale[1], Arunish Kumar[2], Kartik Kapadi[3], Utkarsh Koratkar[4], Vivek Ahire[5]
Professor, Department of Computer Engineering[1]
Students, Department of Computer Engineering[2-5]
NBN Sinhgad Technical Institute Campus, Pune, India

Abstract: *The generation of educational content is being completely transformed by generative AI, which provides creative substitutes for conventional resource creation. Traditional production techniques for educational audiovisual content can entail exorbitant expenses, protracted production schedules, and little customization choices. In educational settings, these restrictions may make it more difficult to scale and adapt. This study offers a unique approach that uses generative artificial intelligence (AI) to automate the production of excellent audio and graphics tailored for educational podcasts.*

This method improves the effectiveness and accessibility of instructional information by incorporating cutting-edge AI models. AI-driven image generating tools and text-to-speech (TTS) systems expedite the production process, allowing teachers to create individualized, captivating, and pedagogically sound content in a fraction of the time and expense. The design of the system architecture prioritizes modularity and scalability. accommodating a range of audience-specific voice styles and material kinds.

The adaptability and efficiency of an AI-powered architecture are demonstrated by a thorough examination of model selection and implementation tactics. The resulting educational podcasts provide a more participatory and inclusive learning environment in addition to addressing the drawbacks of conventional material distribution. By showing how generative AI can turn podcasting into a potent, scalable teaching tool, this study adds to the expanding field of AI-enhanced education.

Keywords: audio-visual production, podcasting, text-to-speech synthesis (TTS), natural language processing (NLP)

I. INTRODUCTION

The rapid advancement of technology has fundamentally altered a number of sectors, including education. One of the main issues facing education today is creating engaging, easily available, and personalized learning resources. Traditional methods of producing instructional materials have several shortcomings, including high manufacturing costs, time constraints, and a lack of personalization. Generative artificial intelligence (GenAI), which can create high-quality audio and video content with minimal human intervention, is a potential solution to these issues. The development of a state-of-the-art educational podcasting system driven by GenAI is the main topic of this article. The project automates the creation of educational podcasts, enhancing their accessibility and personalization via the use of state-of-the-art technologies such as Text-to-Speech Synthesis (TTS), Machine Learning (ML), and Natural Language Processing (NLP).

II. LITERATURE SURVEY

Title	Authors	Description	CHALLENGES IDENTIFIED
Innovating Journalism Education with Podcasts	P. Palomino-Flores *et al.*	This paper explores the integration of podcasts into journalism education,	Difficulty in curriculum alignment, content personalization, and

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 10, May 2025
Impact Factor: 7.67

		discussing how they can enhance learning and engagement.	ensuring student engagement through audio.
Generation of Images from Text Using AI	N. B. Yadav *et al.*	This study examines AI-driven techniques for generating images from text, showcasing the application of GenAI in visual content creation.	Accuracy of image generation, maintaining context, and computational resource requirements.
GenAI on GenAI: Two Prompts for a Position Paper on What Educators Need to Know	B. Stewart*	This position paper discusses key GenAI applications and considerations for educators, emphasizing what is essential for them to understand.	Lack of awareness, ethical concerns, and integration complexity in education systems.
Understanding User Interactions with Podcast Recommendations Delivered via Voice	M. S. Chang *et al.*	This research investigates user interactions with podcast recommendations provided through voice assistants, highlighting engagement patterns.	Limited personalization, voice assistant limitations, and inconsistent engagement.

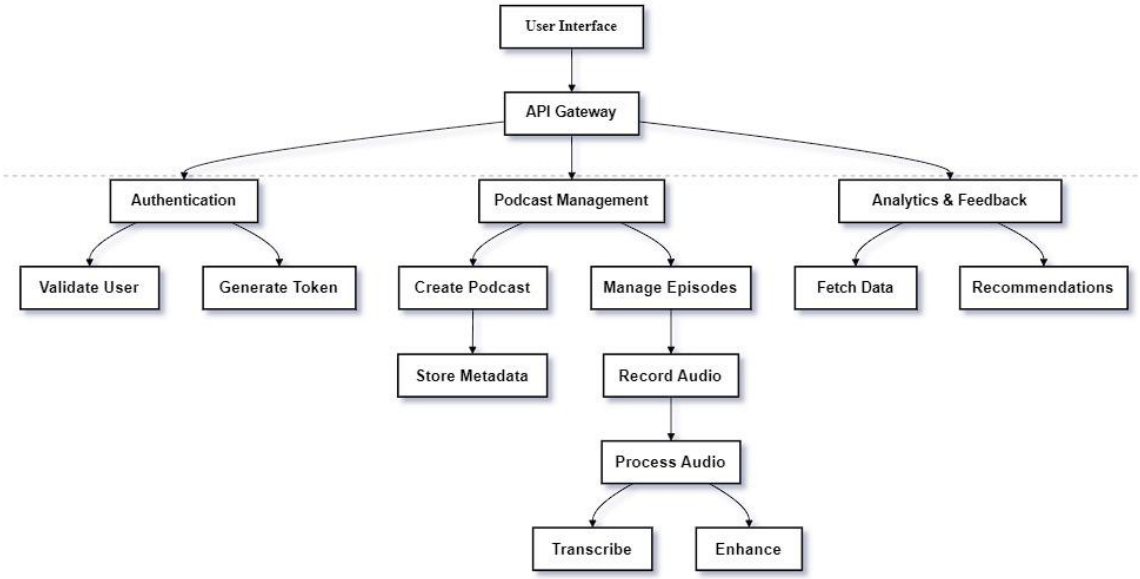
1. Using Podcasts to Innovate Journalism school Examines how podcasts can be used to improve student engagement and learning in journalism school.
2. AI-Powered Image Creation from Text
highlights the potential of generative AI in educational settings by examining methods for turning text into pertinent visual content.
3. GenAI on GenAI: Two Ideas for a Position Paper on Important Information for Teachers draws attention to the fundamental information, moral dilemmas, and useful factors that educators must take into account when implementing GenAI technology.
4. Comprehending How Users Engage with Voice-Delivered Podcast Suggestions examines user interaction using voice-based podcast suggestions in order to enhance engagement tactics and personalization.

III. PROPOSED SYSTEM

The suggested system is an AI-driven platform made to automate the production of instructional podcasts, reducing the need for human interaction and increasing productivity. In order to manage podcast creation, user interaction, authentication, and feedback, the design is modular and consists of multiple interrelated components. The main point of access for users is the user interface. Users can explore previous podcast episodes, listen to generated audio content, submit instructional subjects, and leave feedback. Its straightforward design facilitates easy system navigation for both teachers and students.

The front-end and all back-end services are connected by the API Gateway. Incoming requests from the user interface are managed and routed to the relevant modules, such as analytics, podcast administration, and authentication. Performance, scalability, and security are all enhanced by this consolidated communication.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 10, May 2025
Impact Factor: 7.67



The **Authentication Module** ensures secure access to the system. It consists of two key processes: user validation and token generation. The system verifies credentials to confirm user authenticity and then generates a secure token to maintain an active session during usage.

Secure access to the system is guaranteed by the Authentication Module. User validation and token creation are its two main components. After confirming user identity through credential verification, the system creates a secure token to keep the session active while being used.

The system's key component is the Podcast Management Module. It is in charge of audio processing, episode management, and podcast creation. Based on user input, the system creates instructive content for podcasts using Generative AI. For indexing and retrieval, metadata like title, duration, and topic are saved. Podcast episodes can be edited and arranged by users. AI-powered Text-to-Speech models are also used by the system to record audio. Audio is also treated for enhancement and transcription.

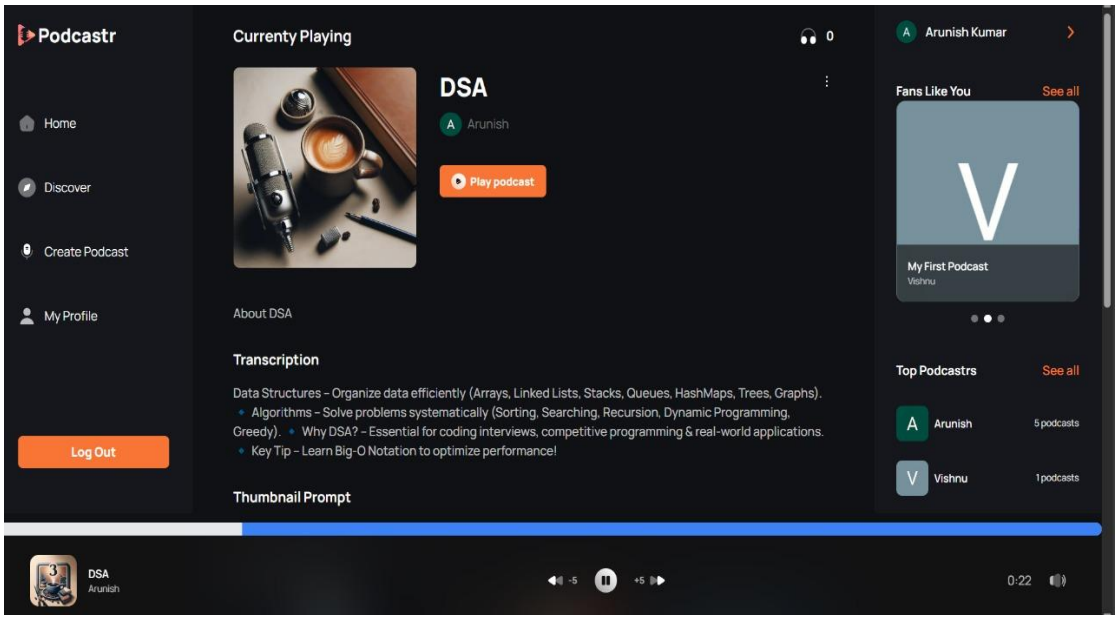
While enhancement enhances audio quality by reducing noise and adjusting clarity, transcription turns speech into text for easier accessibility.

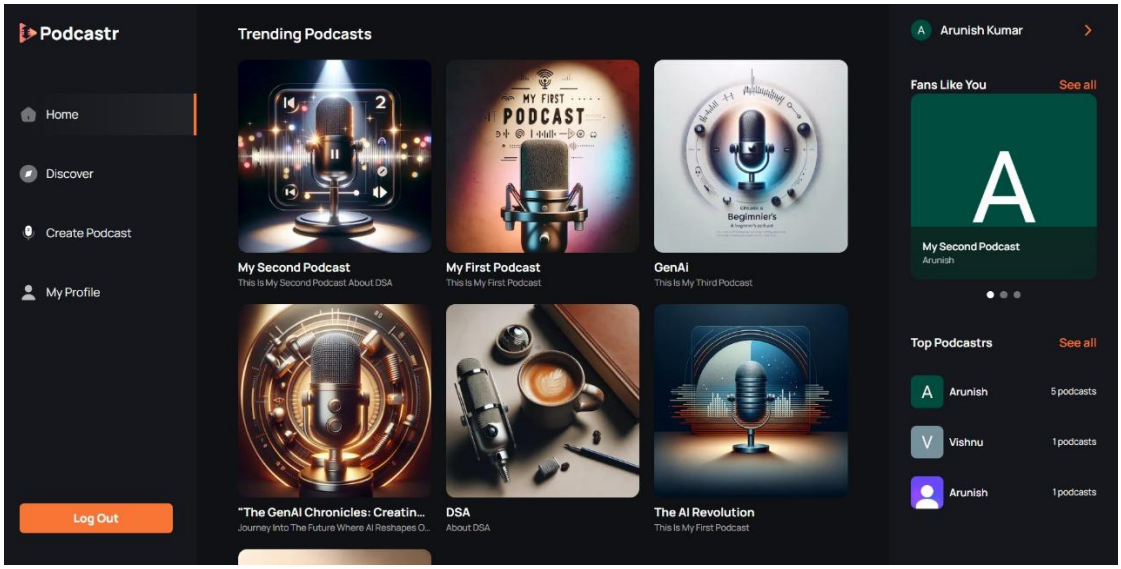
Data about user interactions is gathered by the Analytics and Feedback Module, which then offers tailored insights. This involves retrieving pertinent information about user behavior and using past usage trends to suggest new podcast subjects or episodes. It learns from user comments to help the system develop and get better over time.

In conclusion, the suggested solution uses an effective, AI-based architecture to automate the production of instructional podcasts. It provides audio processing, intelligent content creation, safe access, and tailored suggestions. The system offers a very user-friendly, scalable platform that encourages accessible and interesting learning.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 10, May 2025
Impact Factor: 7.67

IV. RESULTS AND IMPLEMENTATION





V. CONCLUSION

Generative AI is transforming the way educational content is created by allowing personalized learning experiences through dynamic audio-visual media. Unlike traditional methods that are often limited by high production demands, this technology makes it easier and more cost-effective to develop engaging educational podcasts tailored to diverse learners. Its flexible and inclusive nature supports interactive learning models that prioritize the learner's needs. While GenAI offers exciting possibilities, ongoing research is crucial to address concerns related to ethics, scalability, and integration into present-day educational practices. By responsibly advancing these technologies, we can unlock new opportunities for secure, equitable, and widespread access to learning worldwide.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 10, May 2025
Impact Factor: 7.67

VI. ACKNOWLEDGMENT

We wish to extend our heartfelt appreciation to all those who have supported us throughout the development and completion of our project, titled "Empowering Learning: Crafting Educational Podcasts with GEN AI."

First and foremost, we express our deep gratitude to our esteemed guide, Prof. Manisha Navale, for her invaluable guidance, unwavering encouragement, and insightful feedback. Her expertise and thoughtful direction have been crucial in shaping the trajectory and success of this endeavor.

We are also profoundly thankful to the Department of Computer Engineering at NBN Sinhgad School of Engineering, Ambegaon, Pune, for providing us with essential resources and a supportive environment conducive to our research and development efforts.

Additionally, we acknowledge the significant contributions of our dedicated teammates:

Vivek Ahire

Arunish Kumar

Utkarsh Koratkar

Kartik Kapadi

Whose collaborative spirit, commitment, and diligence were vital to the project's success.

REFERENCES

[1] P. Palomino-Flores *et al.*, *Innovating Journalism Education with Podcasts*, pp. 1–4, 2024.

[2] N. B. Yadav *et al.*, *Generation of Images from Text Using AI*, pp. 23–37, 2024.

[3] B. Stewart, *GenAI on GenAI: Two Prompts for a Position Paper on What Educators Need to Know*, pp. 32–41, 2023.

[4] M. S. Chang *et al.*, *Understanding User Interactions with Podcast Recommendations Delivered via Voice*, pp. 190–194, 2018.

[5] C. Miao *et al.*, *EfficientTTS 2: Variational End-to-End*, pp. 1650–1661, 2024.

[6]D. Papadopoulos *et al.*, *Tailoring Education with GenAI: A New Horizon*, 2024.

[7]F. J. García-Peñalvo *et al.*, "Generative Artificial Intelligence in Education: From," *International Journal of Interactive Multimedia and Artificial Intelligence*, vol. 8, no. 5, pp. 5–14, 2024.

[8] Q. Zhi *et al.*, *VisPod: Content-Based Audio Visual Navigation*, in *Proceedings*, 2018.

[9] R. Baskara *et al.*, *Exploring the Use of Generative AI in Student-Produced EFL Podcasts: A Qualitative Study*, 2024