International Journal of Information Technology & Computer Engineering

ISSN 2347–3657

Volume 14, Issue 1, 2026

Script2screen: AI Film Scene Generator

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Abstract:

Script2Screen is an AI-based film scene generator that converts written scripts into visual video content. It automates tasks such as image generation, voice synthesis, and video creation, reducing time, cost, and manual effort in filmmaking. The platform allows users to upload, edit, and process scripts easily by breaking them into scenes and generating corresponding visuals and audio narration. It integrates multiple AI tools into a single workflow, eliminating the need for separate software and ensuring faster, consistent, and reliable outputs. The system also enhances creativity by giving users better control over content generation. Overall, Script2Screen provides an efficient, affordable, and user-friendly solution for students and content creators to transform ideas into engaging videos.

Keywords: *Artificial Intelligence, Script-to-Video Generation, Image Generation, Voice Synthesis, Video Composition, Natural Language Processing, Automation, Content Creation*

1.Introduction

The rapid growth of digital media and content creation has significantly increased the demand for efficient video production tools. Traditional filmmaking processes such as script writing, scene design, voice recording, and editing require considerable time, effort, and technical expertise. These challenges make it difficult for students, independent creators, and small teams to produce high-quality video content. Additionally, existing tools often operate separately, leading to poor integration, increased complexity, and higher chances of errors.

Furthermore, the increasing popularity of social media and online platforms has accelerated the need for quick and engaging visual content. This trend demands systems that can efficiently convert ideas into videos while maintaining quality, consistency, and creative control. However, the lack of automation and unified platforms limits productivity and accessibility in content creation.

Recent advancements in Artificial Intelligence have introduced new possibilities for automating creative tasks. Technologies such as natural language processing, image generation, and voice synthesis enable the transformation of textual scripts into visual and audio outputs. By integrating these technologies, it is possible to streamline the entire video creation process.

This project presents Script2Screen, an AI-based film scene generator designed to convert scripts into complete video scenes. The system automates script processing, visual generation, and audio synthesis, producing a final video output. By addressing the limitations of traditional methods, Script2Screen aims to enhance efficiency, reduce costs, and provide an accessible platform for creative video production.

2 .Literature Survey

Recent research has explored the use of artificial intelligence in transforming traditional filmmaking processes. The study “Script2Screen: Supporting Dialogue Scriptwriting with Interactive Audiovisual Generation” highlights the integration of scriptwriting with audiovisual generation, enabling users to visualize and hear scenes in real time. This approach improves creativity and allows iterative refinement by combining text, visuals, and audio into a unified workflow.

The work “AI-Driven Synchronization of Story, Sight, and Sound” discusses how AI technologies such as natural language processing and deep learning automate scriptwriting, scene visualization, and audio synthesis. The study emphasizes improved efficiency and creativity, while also identifying challenges like maintaining synchronization and narrative coherence.

In addition, “Generative AI for Film Creation: A Survey of Recent Advances” analyzes the impact of generative AI technologies such as text-to-image and text-to-video models in filmmaking. The research highlights advancements in character generation, visual styling, and storytelling, while also addressing challenges like consistency, motion continuity, and controllability in generated content.

The study “From Script to Screen: Generative AI and the Transformation of Film Production” explains how AI is reshaping various stages of filmmaking, including scriptwriting, editing, and visual effects. It shows that AI tools can significantly reduce

production effort and cost while enhancing creative possibilities.

Similarly, "Scriptwriting in the Age of AI: Revolutionizing Storytelling with Artificial Intelligence" focuses on the role of AI in generating scripts, developing plots, and assisting writers in storytelling. It highlights how machine learning models support creativity but still require human guidance for meaningful outputs.

Furthermore, "Generative AI in Film Production: Scriptwriting, Visual Effects, and Post-Production Automation" demonstrates how AI automates multiple stages of film production, particularly visual effects and editing, improving efficiency and reducing manual workload. However, it also points out limitations in achieving complete automation.

These studies collectively indicate that while AI significantly enhances filmmaking through automation and multimodal integration, challenges such as synchronization, consistency, and control still exist. Motivated by these observations, the Script2Screen project proposes an integrated system that combines script processing, image generation, voice synthesis, and video composition to provide an efficient and unified video generation platform.

3 Methodology

The Script2Screen system adopts an integrated approach that combines script processing, image generation, voice synthesis, and video composition to automate film scene creation. The system architecture is designed to convert textual scripts into structured scenes and transform them into visual video outputs through a sequence of automated steps.

The input script is first processed and cleaned, then divided into smaller scenes based on sentences or paragraphs. For each scene, corresponding images are generated using AI models by converting scene descriptions into prompts. At the same time, voice narration is created by converting the scene text into speech using text-to-speech techniques. Captions are also generated to enhance the clarity of the video.

The system includes user and system modules where users can upload, edit, and generate videos, while the system handles script processing, media generation, and storage. All generated components, including images, audio, and captions, are finally combined using video composition tools to produce the final video output.

This methodological integration of multiple components into a single workflow ensures efficient processing, reduces manual effort, and provides a seamless and automated video generation system.

4 Implementation and Experimental Setup

The Script2Screen system is implemented using Python 3.9 with Flask as the backend and React.js for the frontend. The system uses libraries such as PyTorch, Transformers, OpenCV, MoviePy, Pillow, and Matplotlib for processing and generating media content. AI models from Hugging Face and Wav2Lip are used for image generation and voice synthesis. MySQL database is used for storing user and media data.

The experimental setup includes a system with AMD Ryzen 7 processor, 16 GB RAM, and 512 GB SSD to ensure smooth execution. The implementation begins with installing required packages and setting up the database. The server is started using a batch file, and the application is accessed through a web browser.

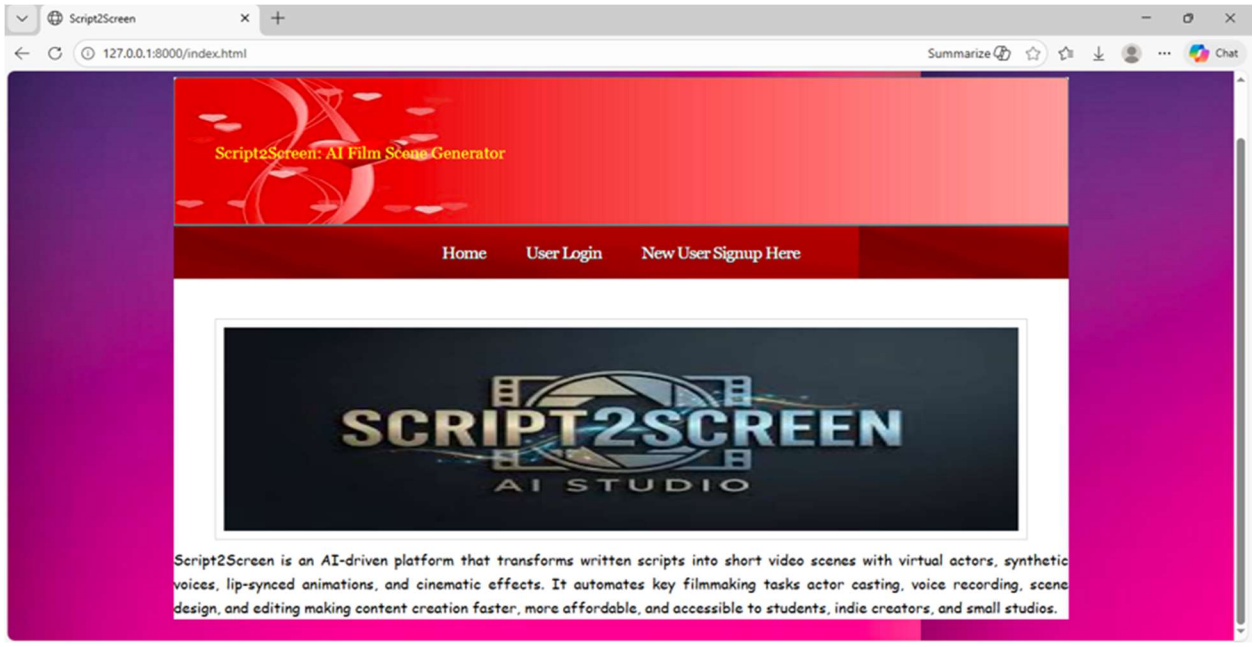
Users can register, log in, upload scripts, edit content, and generate videos through the interface. The system processes the script, generates images and audio, and combines them into a final video output. The results demonstrate that the system successfully creates video scenes from scripts with efficient performance and usability.

The experimental setup also considers data consistency and transaction traceability. Blockchain entries generated during record updates are monitored to verify immutability and chronological ordering, ensuring that modifications remain auditable throughout system execution. Concurrent access scenarios were simulated to observe system staboloty under multi-user interaction, allowing assessment of synchronization efficiency and response behavior during routine healthcare workflows.

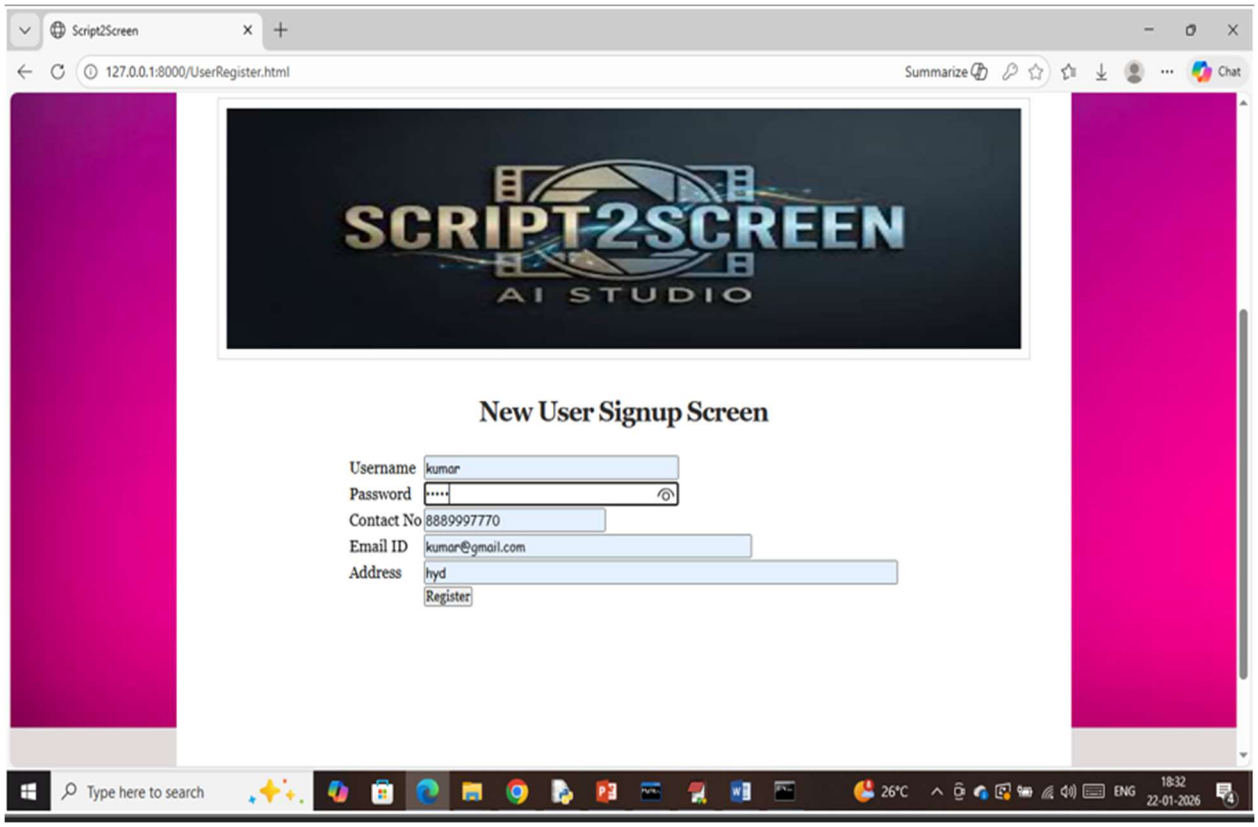
Furthermore, usability aspects were examined through interface interaction observations involving navigation between record modules, appointment views, and claim verification screens illustrated in the project material. The results indicate that the structural layout supports intuitive user engagement while maintaining syatem functionality, hightlighting the practicality of deplying the framework within institutional healthcare settings.

International Journal of Information Technology & Computer Engineering
ISSN 2347–3657
Volume 14, Issue 1, 2026

5 Output



Home Page



New User Sign Up

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ISSN 2347–3657
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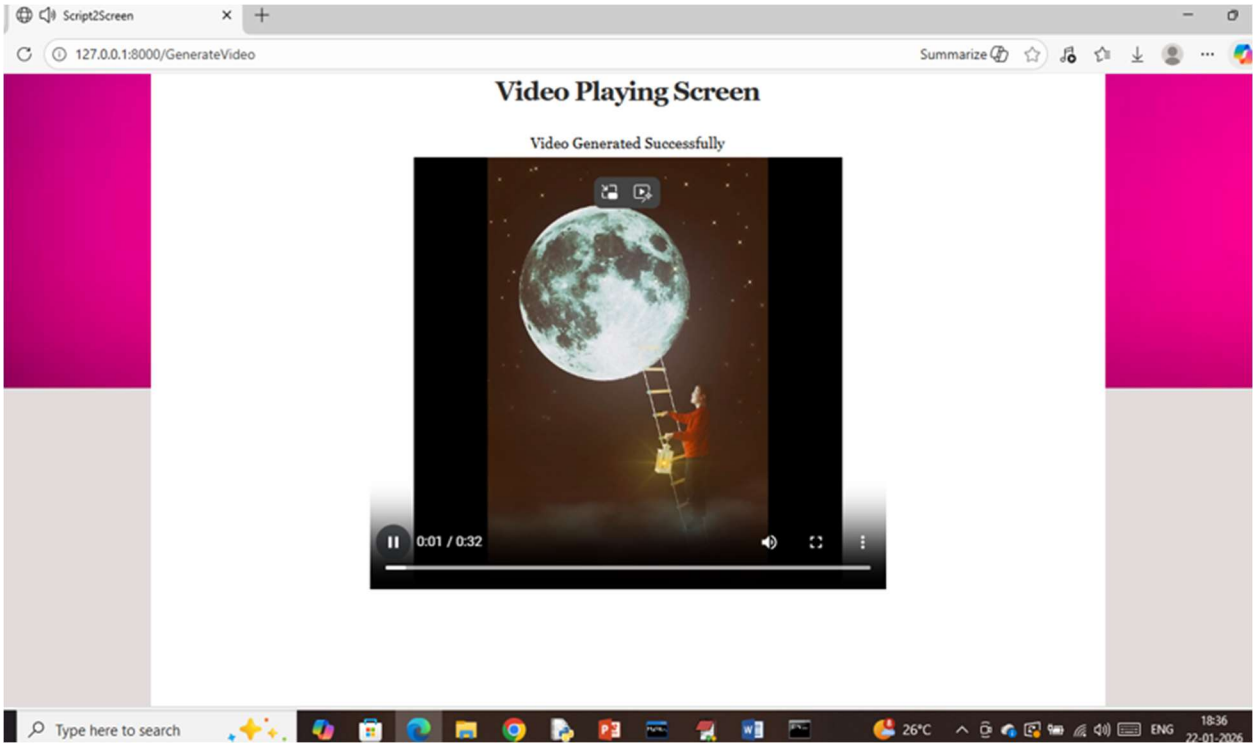
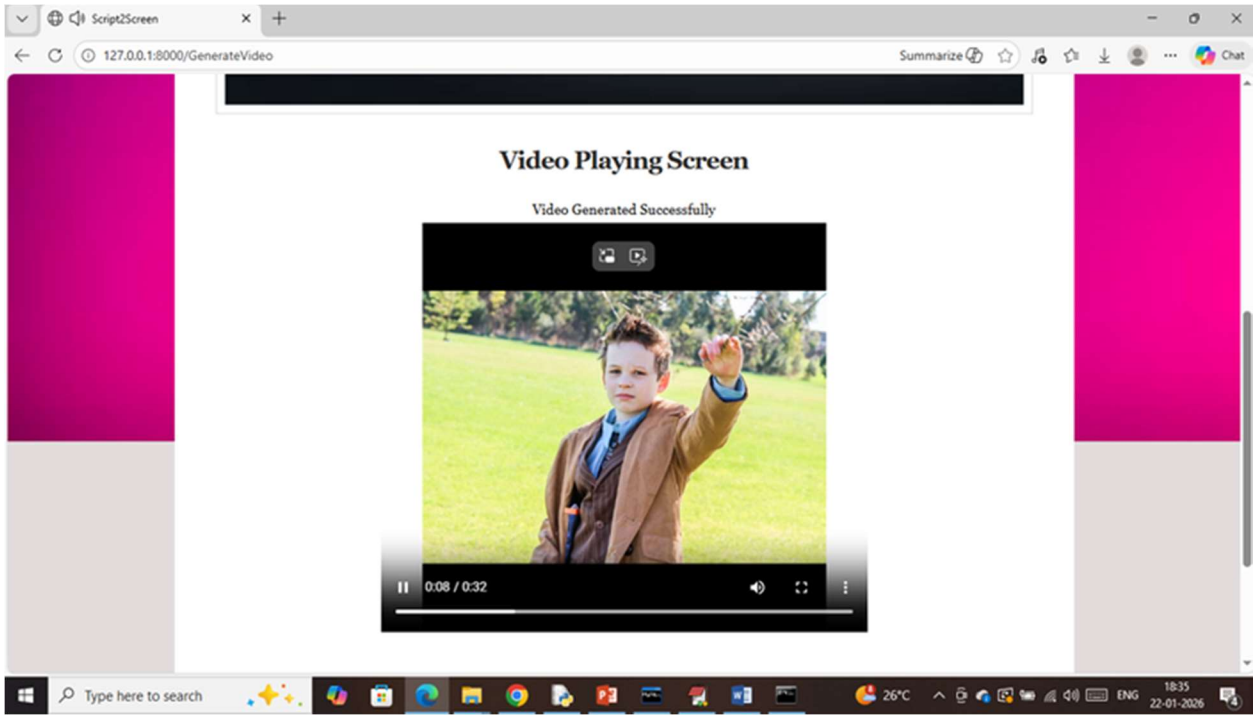
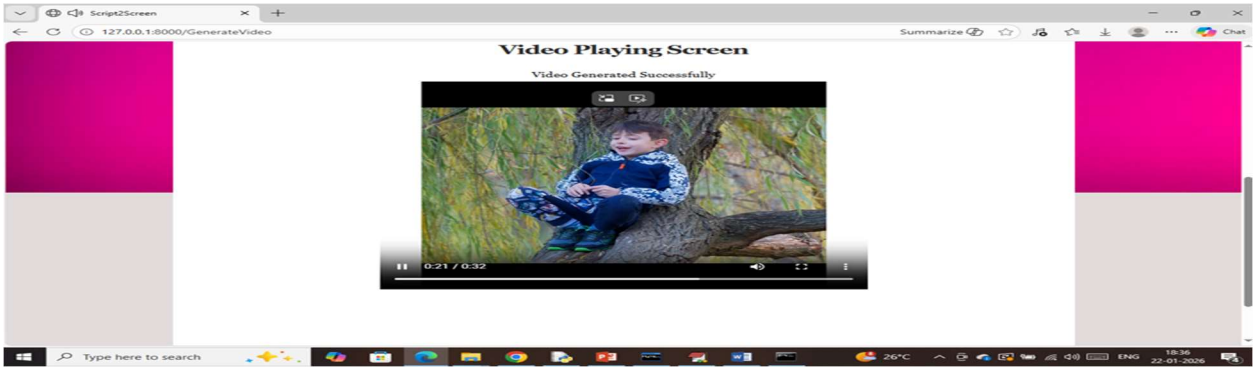


Edit Script & Generate Video



playing video output

International Journal of Information Technology & Computer Engineering
ISSN 2347–3657
Volume 14, Issue 1, 2026



output of playing video

Conclusion

This project presented Script2Screen, an AI-based system designed to automate video generation from textual scripts by integrating script processing, image generation, voice synthesis, and video composition. The proposed approach addresses limitations of traditional content creation by reducing manual effort, minimizing time consumption, and providing a unified platform for generating video scenes. By combining multiple functionalities into a single workflow, the system improves efficiency, usability, and consistency in video production.

Implementation results demonstrate that the system successfully converts scripts into visual video outputs through an interactive user interface. The modular design supports user operations such as script upload, editing, and video generation while ensuring reliable performance and ease of use. Although challenges such as processing complexity and model limitations exist, the system shows strong potential in simplifying content creation. Future enhancements may include advanced AI integration, improved scene realism, and expanded accessibility to further enhance system capabilities.

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