

AI-Generated Virtual Hosts as a Cost-Effective Solution for Small-Scale Event Hosting

Yang Yi Ang., Teng Yi Law

Department of Information Computing Technology, New Era University College, Selangor, Malaysia

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ABSTRACT

The rise of artificial intelligence (AI) has transformed various industries, including event hosting, where AI-generated virtual hosts are emerging as a cost-effective alternative to human hosts. While much research focuses on the technical aspects of these virtual hosts or their application in large-scale events like news broadcasting, there has been little exploration in the context of smaller, budget-constrained events. This study addresses that gap by presenting a practical framework for implementing AI-generated virtual hosts in small-scale events with clear and straightforward agendas. The framework is designed to be accessible to non-technical users and offers a low-cost solution for event organizers. A user study was conducted to assess the public's acceptance of AI-generated virtual hosts, evaluating dimensions such as linguistic proficiency, emotional expression, interactivity, entertainment value, professionalism, and image. The results showed general satisfaction with the host's linguistic proficiency and visual appeal, though interactivity and emotional expressiveness were noted as areas for improvement. These findings suggest that AI-generated virtual hosts are a viable, affordable alternative for small events, particularly those with minimal real-time interaction requirements.

Keywords: virtual event hosts, AI virtual hosts, AI anchors, AI in event hosting, generative AI application

INTRODUCTION

A virtual host is a computer-generated character or avatar that takes on the role of a human host in events, broadcasts, or interactive platforms. In recent years, advancements in artificial intelligence (AI) have greatly improved the development of virtual hosts, making it easier and more cost-effective to create AI-generated virtual hosts or anchors with lifelike avatars, realistic voices, natural facial expressions, and accurate lip-syncing.

The rapid advancements in artificial intelligence (AI) and digital media technologies have revolutionized the way events are organized and hosted. Traditional hosting now faces growing competition from virtual, and increasingly, AI-driven hosts. [1],[2]. These virtual hosts offer significant advantages, including the ability to operate continuously without the need for breaks [3], deliver more stable and error-free performances [4], and exhibit language proficiency [5]. As a result, they present a compelling alternative to traditional event hosting, especially for small events organizers who do not have the budget or connections to hire professional hosts.

Existing research has primarily focused on the technical aspects of AI hosts, including key technologies like 3D virtual engine architecture, image recognition, motion capture [6], and expression technology [7]. Much of the application of AI anchors remains focused on large-scale, high-investment events, such as the Beijing 2022 Winter Olympics [8] or news broadcasting. Additionally, there are studies that have explored their application in scenarios requiring frequent interaction, such as educational environments [9],[10]. While these studies provide valuable insights, there is still room for exploration in the practical use of AI-generated hosts in simpler, less dynamic settings, such as small-scale events.

This study aims to address the need for cost-effective solutions by exploring the application of AI-generated hosts in small-scale events with straightforward agendas. These events typically do not require complex interactions or real-time responses between the audience and the host. The proposed solution is tailored for event organizers who operate on limited budgets and resources, providing a simple yet effective alternative to

traditional human hosts.

Building on this, the research presents a practical framework for deploying low-cost virtual hosts in small offline events. It outlines the necessary tools, processes, and strategies that enable this innovation to be accessible for a wide range of users. Furthermore, the study investigates public perception and acceptance of AI-generated virtual hosts through a comprehensive user study, offering insights into their viability and effectiveness in real-world settings.

The findings suggest that with minimal investment, event organizers can effectively utilize AI-generated virtual hosts in small-scale events, addressing budget constraints and the challenge of finding suitable hosts. The overall results indicate that AI-generated virtual hosts offer a viable, cost-effective alternative for events with straightforward agendas, providing a practical solution for organizers with limited resources.

Related Work

The application of virtual host was well concluded by [11], which the recent application comes to our view are on 2018 in China. After that, due to the fast development of Generative AI, the application has started to bust, which different AI Anchors has been debuted in China, South Korea, Kuwait, Russia, India, and Indonesia [12]. As of now, it has become relatively easy for general users without technical knowledge in AI to create virtual hosts because of the fast development of generative AI.

AI's Impact on News Hosting

One of the primary applications of virtual host or virtual anchor is in the field of news broadcasting. The influence of AI news anchors on audience engagement has been a key area of research. One study by Xue et al. [13] investigating the psychological impact of AI news anchor appearances on viewers' intentions to watch. Their research highlights how the virtual image of AI anchors, particularly female anchors with anthropomorphic voices, was perceived as more attractive to audiences, influencing their willingness to engage with AI-generated content. Despite that, virtual AI news anchors face challenges in engaging some audiences compared to humanoid AI news anchors. The lack of emotional warmth and human traits in AI-generated anchors can affect viewers' willingness to watch, with some feeling disconnected due to the absence of these human elements.

In a separate research [14], the irreplaceability of human news hosts was a central argument. The research pointed out that while AI anchors perform well in scripted, repetitive tasks, they fall short in situations requiring emotional intelligence and spontaneity. Human hosts, especially in live or unscripted scenarios, are still crucial for maintaining audience trust and engagement, where empathy and quick decision-making play pivotal roles.

Besides that, Wang [15] noted that major media outlets increasingly adopt AI anchors to enhance production efficiency. However, despite AI's capacity to handle data-heavy tasks, Wang argues that traditional hosts continue to provide value in roles requiring creativity, emotional depth, and adaptability—skills that AI has not yet mastered.

Instead of merely comparing the two, the research in [16] focused on how AI technology integrates with traditional broadcasters in television news programs. The study found that while AI-generated anchors are effective for delivering routine news, traditional human hosts remain essential for tasks requiring nuanced human judgment and emotional engagement. This suggests that a hybrid model, where AI manages data-driven reporting and human hosts concentrate on creative storytelling, could shape the future of broadcasting.

Similarly, Liang [17] explored how traditional hosts can find a path forward by collaborating with AI. This study emphasized the potential for human hosts to work alongside AI, combining AI's efficiency with the human ability to convey emotion and creativity. Liang concluded that such integration could produce more dynamic and engaging news presentations, leveraging the strengths of both AI and human talent.

Together, these studies reveal that while AI news anchors bring clear efficiencies and improvements to news production, they are not yet capable of fully replacing human hosts, particularly in roles demanding emotional

intelligence and adaptability. The future of broadcasting likely involves a hybrid model, where AI and human anchors work together to deliver more comprehensive and engaging content.

However, in the context of small events with specific agendas, where the host primarily follows a script and guides the flow of the event, an AI-generated host is more than sufficient. In such cases, the use of an AI-generated host can not only meet the requirements but also serve as a unique and attractive feature for the event.

AI's Impact on Education

The integration of AI-generated avatars in education is another key application of virtual avatars, and it is transforming traditional teaching methods. Fink et al. [18] discuss the benefits and challenges of AI-based avatars in education, highlighting how they enhance learning engagement while raising concerns about ethical design and implementation. The study emphasizes the need for careful consideration of how these avatars are deployed in educational environments to maximize their potential while minimizing drawbacks.

Vallis et al. [19] explored student perceptions of AI-generated avatars in teaching business ethics. Their research found mixed responses, with students appreciating the clarity and consistency of AI-generated avatars, but also expressing concerns about the lack of emotional connection and social presence. These findings suggest that while AI avatars can efficiently deliver content, they may struggle to fully replace the human element in education.

Arkün-Kocadere and Özhan [20] compared the effectiveness of AI-generated instructors and human instructors in video lectures. Their study found no significant difference in student performance between the two, though engagement with AI-generated instructors was lower due to perceived disconnect and lack of emotional warmth. This suggests that while AI can effectively replicate certain educational roles, it still faces challenges in matching the engagement levels of human instructors.

Meanwhile, Vallis and Britton [21] examined the use of AI-generated avatars in presenting educational content, specifically focusing on ethical decision-making in business intelligence. Their findings indicate that students were generally open to the use of AI-generated avatars but desired more interaction and customization options. The study concludes that AI avatars have the potential to become a common feature in education, though their ethical implications must be carefully considered.

Creation of AI-generated Anchor

According to Bohacek and Farid [22], the process of creating an AI anchor begins by cloning the anchor's voice using samples from existing footage to generate new audio based on a provided script. The video is then manipulated by synchronizing the anchor's lip movements with the new audio, followed by enhancing the quality of the mouth region using AI tools. Finally, the AI-generated face replaces the original in the video, ensuring that the lip-sync is smooth and realistic. Preprocessing and postprocessing adjustments further refine the output for a convincing final result.

From the findings of the research, it is clear that generating an AI anchor with current generative AI technologies is relatively straightforward. However, the process requires the use of multiple tools at different stages, resulting in a complex and fragmented workflow.

In this study, we aim to explore how a technical novice can create a virtual host using generative AI in a more simplified and streamlined process, minimizing the need for multiple tools and making the creation process more accessible to non-experts.

METHODS

The implementation of an AI-generated virtual host involves the integration of several key components, including script writing, avatar design, sound generation, lip-sync synchronization, facial expressions, and body actions. Each of these elements contributes to the overall creation of a virtual host.

Framework for Virtual Host Production

Figure 1 illustrates the practical framework for producing an AI-generated virtual host, outlining the steps from the initiation of the project to the final production of the virtual host. This framework is suitable for users with basic computer skills, and does not require any specific technical expertise. This makes it accessible to a broader range of event organizers who can implement AI-generated virtual hosts without the need for advanced technical knowledge.

The initial step in the process is to clearly define the purpose of the event. This includes identifying the target audience, establishing the desired tone, and specifying the role of the virtual host, whether as a master of ceremonies, presenter, or another function. By outlining these elements at the outset, the framework ensures that subsequent design and production decisions are consistently aligned with the event's objectives and thematic requirements.

After the event's objectives are identified, the next phase involves the creation of the script that the virtual host will deliver. Generative AI tools such as ChatGPT, Claude, and other natural language generation models can be employed to assist in developing the script. The use of generative AI significantly streamlines the scriptwriting process, which is particularly beneficial for small event organizers who may lack the resources to hire professional scriptwriters. By leveraging generative AI, these organizers can reduce costs while still producing tailored, high-quality scripts aligned with the event's theme and objectives.

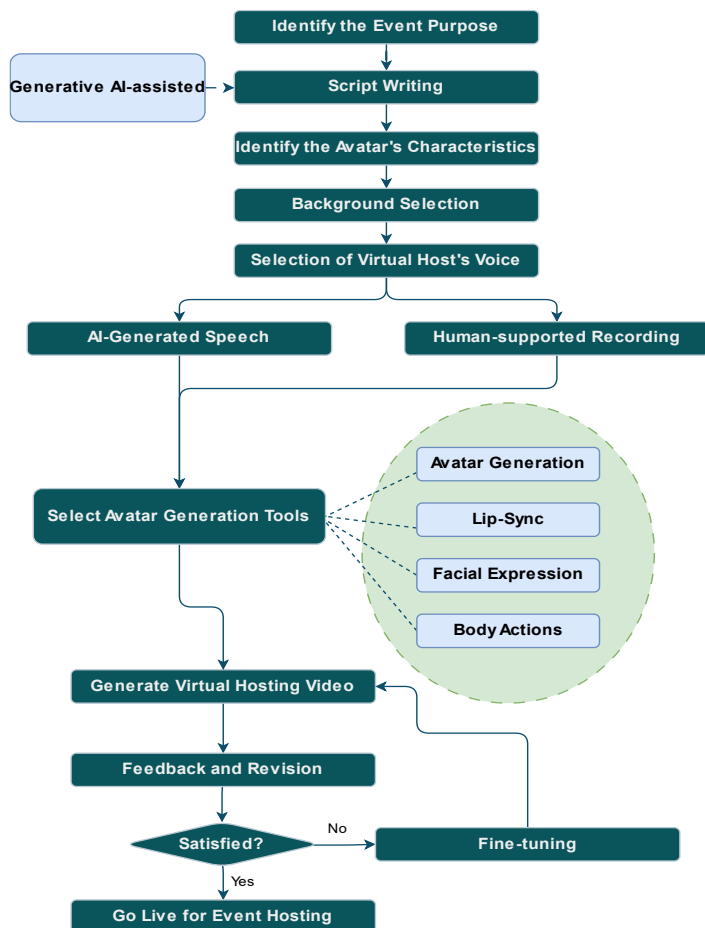


Fig. 1 Framework for virtual host production assisted with generative AI tools.

The next step is to design the avatar's characteristics to align with the event's theme. This involves selecting visual elements such as the avatar's appearance, clothing, and overall aesthetic to ensure consistency with the event's tone and audience expectations. Depending on the type of event, the avatar can be photorealistic, closely resembling a human, or stylized, with more animated or exaggerated features. For small event organizers with limited budgets, avatar design can be customized using ready-made options available through various avatar generation tools in the market.

Once the avatar is designed, the next consideration is selecting an appropriate background that complements the event's theme. The background plays an important role in visually integrating the avatar within the event's environment. Choosing the right background enhances the overall visual appeal and ensures a cohesive presentation between the virtual host and the event's surroundings.

Before generating the virtual host, a critical step is selecting the host's voice. There are two general approaches to virtual hosting. The first is fully synthetic, where both the avatar and voice are computer-generated using AI technologies. The second approach involves a computer-generated avatar, but the voice, motion, and facial expressions are captured from a real human, a method often used in live performances. While human-supported voice recordings offer a more natural tone, they are more prone to errors and tend to be costlier. In contrast, AI-generated speech is more cost-effective and error-free, though it may sound less natural than human voices. The voice selection can be based on the event's needs, budget, and the desired level of realism.

Once all decisions are made, a suitable avatar generation tool can be selected to meet the defined requirements. Most commercial avatar generation tools offer essential functions, including avatar creation, lip-sync synchronization, facial expression mapping, and body movements.

The virtual hosting video can be generated using the selected tools, allowing for a review of the results. If the outcome does not meet expectations, fine-tuning such as adjustments to facial expressions or body movements can be made, and the video can be regenerated. Once the desired results are achieved, the virtual hosting video is ready for use in the event.

Avatar Creation

The avatar serves as the visual representation of the virtual host, and its design is crucial for audience engagement. There are two main types of avatars: stylized avatars, which feature cartoonish, exaggerated designs, and photorealistic avatars, which can either be modeled after real human faces or generated as fully synthetic yet highly lifelike representations. Stylized avatars can further be categorized into Live2D and Live3D styles [23]. Each type of avatar offers distinct advantages depending on the event's tone and audience expectations.

There are various tools in the market available for generating avatars, many of which utilize generative AI to create realistic or stylized designs. For photorealistic avatars, tools like CapCut [24], HeyGen AI [25], and Deepbrain AI Studio [26] offer highly lifelike human representations. For stylized avatars, tools such as BCut [27], Deepmotion [28], and Animaze [29] are well-suited for creating cartoonish or exaggerated designs. Most of these tools can be freely used or offer free trials, allowing users to experiment and choose the most appropriate tool for creating avatars based on their specific needs.

Given their affordability and accessibility, these tools are particularly suitable for small event organizers with limited budgets. In addition to being cost-effective, these tools do not require any specific technical expertise and can be easily learned by users with basic computer skills. This allows event organizers to quickly create engaging and professional-looking virtual hosts without the need for expensive custom development or technical training. Figure 2 shows examples of a stylized Live3D avatar and a photorealistic avatar created using BCut [27] and CapCut [24].

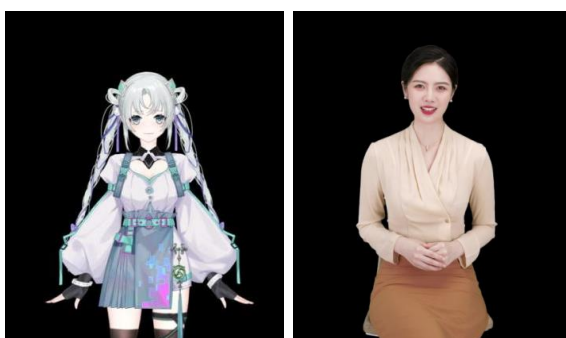


Fig 2 Stylized Live3D avatar and photorealistic avatar created using BCut (left) and CapCut (right).

Voice Synthetic and Lip Sync

The voice for virtual avatars can generally be either AI-generated (synthetic) or a human voice recording. Most of the tools such as BCut [27] and CapCut [24] mentioned earlier include AI voice synthesis and lip-sync capabilities. These tools automatically generate voices based on the provided script. Users can select from a variety of voice options, including different styles, genders (male or female), and accents or dialects. Once the voice is generated, the avatar can be linked to the voice for automatic lip-syncing, ensuring that the avatar's mouth movements match the speech.

If users prefer to use real human recordings, they can also link the recorded voice to the avatar for lip-syncing. Tools like BCut [27] offer live recording features that capture human eye and mouth movements and synchronize them with the avatar. Additionally, HeyGen AI [25] can mimic a real human voice using just a small sample, providing a highly realistic voice for the virtual host.

The flexibility of different tools makes them accessible to users with varying levels of technical expertise. Whether using synthetic or human-generated voices, these AI-powered platforms offer a seamless way to create engaging virtual hosts that cater to the specific needs of the event, ranging from small-scale gatherings to more formal, professional presentations.

Body Motion and Facial Expression

Virtual avatar generation tools typically offer advanced features for body motions and facial expressions to enhance the realism of avatars. In BCut [27], users can capture facial expressions and head movements through live recording, requiring only the user to face the camera. This feature allows for real-time mapping of human facial expression onto the avatar, making it highly customizable. Alternatively, users can choose from a set of pre-designed body motions and facial expressions, streamlining the process for those seeking quicker solutions.

HeyGen AI [25] goes a step further by allowing users to mimic body movements based on recorded samples. This functionality provides greater control over the avatar's physical actions, closely aligning with the user's actual movements. Meanwhile, in CapCut [24], body motions are generated automatically, with casual hand movements integrated into the avatar's actions. This automation adds a level of fluidity and naturalness, making the avatar appear more lifelike without requiring manual input for specific gestures.

These tools enable users to create highly dynamic and interactive virtual hosts, making them suitable for a range of applications, from live events to pre-recorded presentations.

User Study

A user study was conducted to evaluate the audience's acceptance of AI-generated virtual hosts following a small-scale event. The event was a seminar lasting approximately three hours, featuring two keynote speakers and Q&A sessions in between. The virtual host opened the event by introducing the agenda, followed by introducing the keynote speakers. After each speaker's presentation, the virtual host moderated the Q&A sessions, asking the audience for questions and directing them to the speaker. The virtual host also managed transitions, including announcing breaks and introducing the second speaker after the break. Once the event concluded, the virtual host formally ended the session and requested that the audience complete the questionnaire to provide feedback by scanning the QR code showing in the screen.

Virtual Host Settings

The virtual host used in the event was created entirely with AI tools offering free features. All tools and functionalities employed in the process were cost-free, ensuring that no expenses were incurred. The script for the virtual host was partially generated with the assistance of generative AI using ChatGPT-4o, which provided suggestions and refinements to finalize the content. For the visual representation, a stylized Live3D avatar was created using BCut [27]. The avatar, named "Yuan", was designed to portray a cute, youthful female character, aligning with the event's tone.

The virtual host's voice was generated using CapCut's [24] AI-generated voice, which provided a youthful tone that matched the avatar's appearance. The AI-generated voice was then imported into BCut, where the built-in Lip Sync function automatically synchronized the avatar's mouth movements with the speech. Additionally, BCut's pre-set facial expressions and body actions were utilized to enhance the avatar's expressiveness, making the virtual host more dynamic and engaging for the audience. Figure 3 shows the virtual host facilitating the event.



Fig. 3 The virtual host “Yuan” facilitating the event on the stage.

Participants

The study involved 36 participants, with an age range spanning from 16 to 68 years old. The majority of participants (82.9%) had never previously attended events or activities hosted by a virtual host. Participants were recruited from the public, ensuring a diverse range of perspectives on the use of AI-generated virtual hosts in small events. Figure 4 shows participants taking a photo with the virtual host.



Fig. 4 Participants posing for a photo with the AI-generated virtual host after the event.

Measures

The primary measure of audience acceptance of the AI-generated virtual host was a questionnaire administered after the event. Participants were asked to rate their experience across six key dimensions using a 5-point Likert scale (1 = completely dissatisfied, 5 = very satisfied). The six dimensions assessed were:

- 1) *Linguistic Proficiency*: The clarity and accuracy of the virtual host's speech and language skills.
- 2) *Emotional Expression*: The virtual host's ability to convey appropriate emotions during the event.
- 3) *Interactivity*: The level of engagement and responsiveness of the virtual host in facilitating audience

participation, especially during Q&A sessions.

- 4) *Entertainment Value*: The virtual host's ability to keep the audience entertained throughout the event.
- 5) *Professionalism*: The degree to which the virtual host maintained a professional tone and demeanor.
- 6) *Image*: The visual appeal and overall appearance of the virtual host.

RESULTS AND DISCUSSION

The audience's acceptance of the AI-generated virtual host was measured using a 5-point Likert scale across six dimensions: linguistic proficiency, emotional expression, interactivity, entertainment value, professionalism, and image. The mean satisfaction scores and corresponding standard deviations for each dimension are presented in Table 1.

Table I: Mean Satisfaction Scores and Standard Deviations for Audience Perceptions

Dimension	Mean (μ)	Standard Deviation (SD)
Linguistic Proficiency	3.5	1.0
Emotional Expression	3.0556	0.9840
Interactivity	2.8611	1.1748
Entertainment Value	3.1667	1.1339
Professionalism	3.0833	1.0790
Image	3.3889	1.1533

The overall mean score for the dimensions clustered around 3 or higher, with the exception of Interactivity, indicating that participants were generally neutral to moderately satisfied with most aspects of the virtual host. Table 1 illustrates that the highest mean score was observed for Linguistic Proficiency ($\mu = 3.5$, $SD = 1.0$), indicating that participants were generally satisfied with the clarity and accuracy of the virtual host's speech.

In contrast, Interactivity received the lowest mean score ($\mu = 2.8611$, $SD = 1.1748$), suggesting that participants found the virtual host less engaging in terms of interaction compared to other aspects. This also highlights a shortcoming in the virtual host's ability to facilitate engagement with the audience, a challenge frequently emphasized in other studies on AI anchor [14]-[17].

However, it is worth noting that the standard deviation for Interactivity ($SD = 1.1748$) was relatively higher compared to the other dimensions, indicating a wider range of participant opinions. This suggests that while some participants were satisfied with the level of interaction provided by the virtual host, others were less impressed. This variability may reflect differences in expectations regarding the host's ability to engage the audience, or individual preferences for human-like interaction in virtual settings.

In addition to Linguistic Proficiency, the second and third highest mean scores were observed for Image ($\mu = 3.3889$, $SD = 1.1533$) and Entertainment Value ($\mu = 3.1667$, $SD = 1.1339$), suggesting that participants were relatively satisfied with the visual appeal and entertainment provided by the virtual host. These aspects contributed positively to the audience's overall experience, highlighting the importance of both visual design and engagement in the success of virtual hosts.

Overall, while participants were generally satisfied with the virtual host's performance, the data suggest that significant improvements in interactivity are needed to create a more engaging experience. These findings highlight the potential for AI-generated hosts in small-scale events but also underscore the importance of addressing current limitations to ensure broader acceptance and adoption in future applications.

Future Work

Despite the growing interest and advancements in virtual hosts, there are significant limitations that need to be addressed for their broader acceptance and effectiveness in live events. One of the primary challenges is the lack of flexibility and adaptability compared to human hosts. Virtual hosts often struggle with real-time interaction, especially in dynamic environments where unexpected situations arise. Their responses can be perceived as mechanical and less engaging, which may diminish the overall event experience for the audience. Future work should focus on enhancing the interactive capabilities of AI-generated hosts, particularly in real-time audience engagement and personalized responses.

In addition, further research could explore the impact of different event types on the acceptance of virtual hosts. This study focused on small-scale events, but it would be useful to examine how virtual hosts perform in larger, more complex settings, such as conferences, workshops, or live broadcasts. Understanding how the AI host's performance scales with the complexity of the event could provide more comprehensive guidelines for their effective use.

In summary, while AI-generated virtual hosts show great potential, continued advancements in interactivity are necessary to fully unlock their capabilities and expand their use in various event settings.

CONCLUSION

This study presents a practical framework for deploying AI-generated virtual hosts in small events, enabling individuals without specialized technical expertise to implement virtual hosts with ease and at a low cost. The framework demonstrates the potential for cost-effective event management through AI, making it accessible to a broader range of event organizers who may lack the resources to hire professional human hosts.

To assess the effectiveness of the virtual host, a user study was conducted to explore audience acceptance in a small-scale event setting. The study focused on several key dimensions, including linguistic proficiency, emotional expression, interactivity, entertainment value, professionalism, and image. Overall, participants were generally satisfied with the virtual host, particularly in terms of its linguistic proficiency and image.

While AI-generated virtual hosts present a promising solution for small-scale events, this study emphasizes the need for improvements in interactivity and emotional expressiveness. Future research should focus on enhancing these elements to create a more engaging and dynamic virtual host experience.

However, for events with clear agendas that do not require significant real-time interaction or complex audience engagement, the proposed AI-generated virtual host framework is more than sufficient. It offers an effective and affordable alternative for small-scale event organizers to manage their events.

In conclusion, AI-generated virtual hosts hold significant potential in the event industry, but their success will largely depend on the specific event purpose and how effectively they can replicate the natural interaction and emotional connection of human hosts. As AI technology continues to evolve, enhancing the personalization and interactivity of virtual hosts will be essential for achieving broader acceptance and maximizing their effectiveness across a variety of event formats.

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