

## **Artificial Intelligence in Film Casting: Generating character references based on character dimensions**

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### **Abstract**

The film casting process involves character analysis based on character dimensions, encompassing physiological, sociological, and psychological aspects, to match actors to character requirements from the screenplay. This research explores artificial intelligence (AI) utilisation to convert character text descriptions into visualisations based on the dimensions contained in the screenplay. These visual representations help align aesthetic and cultural preferences between screenwriters and casting directors. The visual results are then analysed to determine the most suitable actor for the character. Despite its limitations, artificial intelligence can offer an accurate and efficient alternative in character visualisation, thus supporting a more targeted casting process.

**Keywords:** Artificial Intelligence; casting; character; film

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### **1.0 Introduction**

Casting is a vital part of a film's pre-production phase. Selecting actors who accurately fulfil the screenplay's requirements can significantly contribute to the film's success. Film audiences can often immediately identify whether an actor can give an authentic and compelling performance; therefore, casting is commonly said to be 75 percent of a film's success (Rabiger & Hurbis-Cherrier, 2020). Understanding a character's three dimensions is essential for casting because it forms the foundation of a character in a screenplay and serves as a crucial guide in selecting actors. The character's three dimensions consist of physiological, sociological, and psychological dimensions (Egri, 2004). The physiological dimension refers to the physical attributes of the character, for instance, skin colour, dental features, facial structure, hair, age, birthmark, and physical disability. The sociological dimension refers to the social traits of the character, such as ethnicity, occupation, social class, nationality, marital status, and education. The psychological dimension refers to the internal qualities of the character, including temperament, intelligence quotient, moral standard, personality traits, complexes, and mental issues.

The casting process is typically conducted by the casting director and their team through an announcement containing information on required character traits for the film. The casting process usually focuses on physiological and sociological dimensions, as the psychological dimension emerges through the actor's performance. Fig. 1 shows an example of a casting announcement. The next step

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is to select potential actors by reviewing their submitted portfolios or inviting them to participate in a series of auditions, such as acting or screen tests, before picking the right actor for the role.



Fig. 1: Example of a Casting Advertisement Poster for the Short Film "Rong"  
(Source: Rong short film documentation)

One challenge filmmakers often face is casting actors who accurately embody the character descriptions in the screenplay. The process of casting suitable actors is both time-consuming and resource-intensive. To streamline the casting process, many film productions hire casting agencies, which typically maintain detailed databases of performers, including their profiles and acting experience. Casting agency commissions require additional budget allocation during the casting phase, which can be particularly burdensome for filmmakers, especially those with limited production budgets, such as independent or student filmmakers.

Another challenge in the casting process is the difficulty in finding visual references that accurately match the desired character descriptions based on the screenplay while ensuring consistent visual interpretation between the screenwriter and the casting team. Some independent film productions utilize visual references from photos or images of well-known actors who do not fully embody the intended character. This method is often inefficient, as the references used may not match the three dimensions of the character demanded in the screenplay. The different aesthetic and cultural preferences of screenwriters and casting directors can also be a problem in the casting process. The varying definitions of beauty across different aesthetic and cultural preferences can result in choices that do not match the screenplay's requirements. For example, the screenwriter's definition of beauty might include dark skin, large eyes, and curly hair, while the casting director may define beauty as fair skin, straight black hair, and slanted eyes.

Inconsistent visual references for a character can negatively impact casting decisions and, ultimately, the film's overall production value. Although the role casting method based on existing actor databases is widely adopted, actor selection is primarily driven by actor data availability rather than alignment with the character dimension required by the screenplay. As a result, discrepancies often arise between the screenwriter's vision and actors' visual interpretation during the casting process. Therefore, this research suggests an alternative casting approach that can help connect character's text description with more precise visualization.

This research aims to explore the utilization of text-to-image based artificial intelligence to generate visual character representations and to develop an exploratory workflow that can assist in the casting process. The utilisation of artificial intelligence to generate visual references that match the three dimensions of the character is currently very feasible. The text-to-image feature can generate reasonably accurate visual representations of a character based on the screenplay's requirements.

## 2.0 Literature Review

Artificial intelligence is currently advancing rapidly (Idris et al., 2024), affecting various aspects of human life. Artificial intelligence can be applied across varying fields, including healthcare, economics, and agriculture (Wahyudi, 2023). The film industry is no exception. Momot (2022) stated that further use of artificial intelligence in the filmmaking process is inevitable. This study further revealed several significant factors that influence the integration of artificial intelligence in film production, including the readiness of artificial intelligence, the suitability of the needs in the film industry, and filmmakers' capacity to implement new technology (Momot, 2022). Collaboration between the film industry and artificial intelligence is a complex and time-consuming process that demands an advanced artificial intelligence infrastructure and well-trained human resources.

Currently, artificial intelligence remains underutilised in the film production process. However, particular technical work of filmmaking that was previously done manually is gradually being automated through artificial intelligence. Reddy (2019) stated that multiple applications are utilised in the technical aspects of film production. One example is text-to-image generation to help create storyboards through an application called RivetAI (Reddy, 2019). The deployment of artificial intelligence in these applications allows filmmakers to work rapidly and efficiently across pre-production, production, and post-production phases. Ghosh (2023) reported that artificial

intelligence is highly likely to be used in various stages of a film's production. One example is that by creating actors digitally with artificial intelligence, it is possible to speed up the casting process because casting decisions can be more accurate (Ghosh, 2023).

Several previous studies (Momot, 2022; Reddy, 2019; Wahyudi, 2023) indicate that artificial intelligence utilization in the film industry has primarily been used to enhance technical production efficiency and automate processes. However, most existing research has not examined in depth how artificial intelligence can be utilized as an interpretative tool within the creative process, particularly in translating textual character descriptions into visual representations that can be used for casting. Moreover, during the background research, we were unable to identify studies that explicitly links the usage of text-to-image generation with character dimension theory. Therefore, this research proposes a conceptual framework that links film character theory with artificial intelligence, using text-to-image generation to bridge narrative analysis and casting decision.

### 3.0 Methodology

This research, conducted in the middle of 2023, employed an exploratory study approach to investigate the potential usage of artificial intelligence in generating visual references for characters based on film screenplays. Exploratory research is used to gain a more profound or new insight about a particular phenomenon (Mudjiyanto, 2018). The application of artificial intelligence in film production remains relatively novel; therefore, this research focuses on understanding the processes, experiences, and technical and artistic possibilities of integrating artificial intelligence into the pre-production phase, particularly the casting process.

The rapid advancement of text-to-image generators enables the exploration of artificial intelligence utilisation in enhancing film casting. The initial exploration conducted in this research is to identify an application or an artificial intelligence platform with a text-to-image generator that allows text conversion into images. Applications were selected based on their capacity to generate realistic visuals and offer flexible settings. After attaining a suitable application, the next step is to enter the character description. The character description was compiled based on the three dimensions of the character and translated into English to ensure system readability, emphasising the physiological dimension, which will be realised visually. Next, the description is provided to the platform with a specific visual configuration until a suitable image is obtained. The visual results are then curated and evaluated based on their conformity to the screenplay.

### 4.0 Findings

Character references are created using an online text-to-image generator on artificial intelligence applications, employing keywords derived from the character's three dimensions. Physiological and sociological dimensions provide a basis for creating references, as the psychological dimension is challenging to convey visually. The text-to-image generator is a tool that processes text input to generate high-precision images based on the provided descriptions (Bie et al., 2023). The sample of character dimensions used in this research is taken from the Mbarang screenplay by Endang Mulyaningsih. The character whose visual reference will be generated is Lanang, the main character in the story. Numerous web-based platforms are available for converting text into images. Some platforms offering this service include Canva, Playground.com, Lorem Ipsum, and Textcraft. This research uses Playground.com version 1, which was released in early 2023. Playground.com offers a range of artificial intelligence tools and models designed for experimentation and development. One of the features available on Playground.com is the text-to-image generation, which enables users to generate images based on textual input. Since Playground.com offers flexible usage with no fixed workflow, this research employs a straightforward approach to convert text into images, making minimal adjustments to the default settings.

#### 4.1 Character breakdown

The process begins by creating a character breakdown if the screenplay does not yet have character descriptions, as not all screenplays include a screenplay bible. This research uses the main character, Lanang, a teenage boy obsessed with becoming a dancer, as the basis for generating a visual reference. His passion for dance is inherited from the artistic blood of his mother, Sumi, and his grandfather, Slamet, who suffers from dementia. But his father objected to his life choice. Initially, the reason for his father's objection was that the image of male dancers is often stereotyped by society as a womaniser. However, it later became clear that his objection stemmed from the trauma of losing his wife, who left him for one of her male fans. Details of Lanang's three dimensions can be seen in Table 1.

Table 1. The Three Dimensions of Lanang's Character

Physiological	Sociological	Psychological
Lelanange Jagad (Lanang) is a 17-year-old male with straight shoulder-length hair, brown skin, brown pupils, thick eyebrows, sharp eyes, sharp nose, full cheeks, thin lips, and a square face. Lanang is 170 cm tall and has an athletic body with strong hands and feet. When performing, Lanang typically wears traditional Javanese dance attire inspired by the Mahabharata epic. His costume includes a bare torso, knee-length black trousers, anklets, a batik waistcloth, a red	Born Javanese, Lanang grew up in a family that loved Javanese cultural arts. From a young age, Lanang had a strong interest in Javanese dance, but his father always forbade him from pursuing it. Lanang grew up in a simple family; his father worked as an elementary school guard with a modest income.	Lanang grew up as a boy determined to reach his goals. He was committed to working hard in his studies and pursuing his dreams as a dancer.  Although he did not have outstanding academic achievements at school, Lanang was talented in the arts, particularly dance and gamelan music.

waist sash, a green shawl, and a tall black-and-gold headdress.

Lanang lived with his father and grandfather in a humble wooden house owned by his grandfather. Lanang's mother disappeared when he was a child. Lanang was still in high school when he decided to leave home and school.

His yearning for a maternal figure drives Lanang's obsession with finding his mother.

(Source: "Mbarang" screenplay bible)

#### 4.2 Text input

After getting a description of the three dimensions of the character, the next step is to input the description into the text-to-image generator. In this study, it was found that the process of visualising character dimensions could only include physiological and sociological dimensions. This limitation occurs because the still images produced through text-to-image generation are unable to represent the psychological aspects of a character during the research. The sociological dimension of Lanang as a Javanese dancer is conveyed in the prompt through the traditional costume he wears. In the screenplay bible, Lanang's age is listed as 17; however, due to limitations of the artificial intelligence platform at the time of the research, inputting this age resulted in images that portrayed him as being in late childhood, which appeared too young. Therefore, to achieve the desired visual representation of adolescence, his age was adjusted to 21. Additionally, to ensure seamless text-to-image conversion, the text should be translated into English, as some Indonesian words may not be recognised by the artificial intelligence platform. Table 2 presents the final prompt submitted to Playground.com.

Table 2. Prompt Used for Generating Lanang's Character

Male 21-year-old. Long hair, straight shoulder-length hair, brown skin, brown pupils, thick eyebrows, sharp gaze, sharp nose, full cheeks, thin lips, square face. This boy has a height of 170 cm, an athletic build, and strong arms and legs. He wore a Javanese dance costume from the Mahabharata story: knee-length black pants, anklets, a waist covering in the form of batik cloth, a red cloth waistband, a green shawl, a bare chest, and a black and gold high hat.

(Source: "Mbarang" screenplay bible)

#### 4.3 Setting the configuration

If necessary, additional adjustments may be applied to achieve results that match the visual representation of the character dimensions in the screenplay. Some adjustments available include filter, prompt guidance, quality & detail, and seed. The filter option enables the application of specific visual effects to the image, such as enhancing sharpness or adjusting colour tones. In this research, the Realism Engine filter is used for generating a realistic image, such as the depiction of a lifelike character in a fictional film screenplay. The prompt guidance option is employed to adjust the level of creativity the system applies to the generated images. Higher values will produce images that closely align with the text prompt. In comparison, lower values will produce images that are interpreted creatively by the system and deviate from the original text prompt. The quality & detail option is applied to set the quality and detail of the resulting image. The quality value is employed to adjust the desired level of resolution or image clarity, while the detail value controls the amount of visual intricacy, including specific features of the character's body parts. The seed option is a numerical value used to initialise a pseudorandom number generator, which is typically employed to determine the initial state of model parameters (Bethard, 2022). The seed value is user-configurable and can be set to any arbitrary number. For this research, as illustrated in Fig. 2, the value of prompt guidance is set to 7 to ensure the image is detailed enough and aligned with the text description from character dimensions, the quality & detail value is set to 50 to ensure that the details of the character's body parts are still proportional, and the seed value is 363633245.

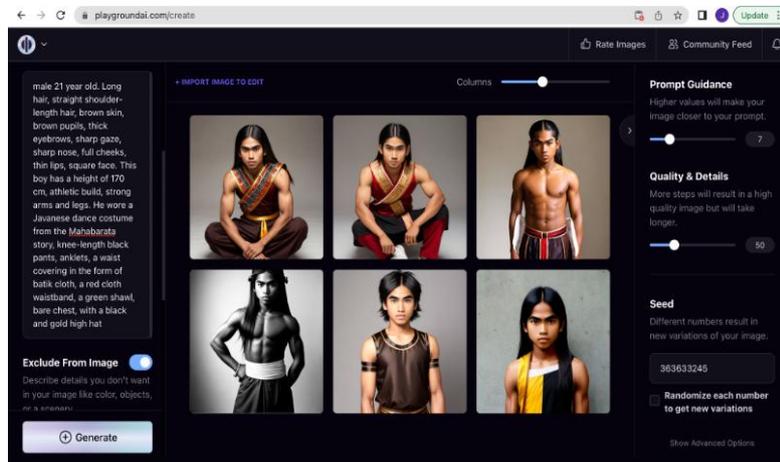


Fig. 2: Text-To-Image Generation Process on the Playground.com Platform  
(Source: playground.com)

#### 4.4 Determining the appropriate reference model

After setting the configuration for the filter, prompt guidance, quality & detail, and seed to the desired value, the image will be generated. The generation process refers to a phase in which new content, such as images, text, or other data, is produced based on previously set parameters. Results from using the Playground platform indicate that each time the generate button is activated, a different image is created, though all share certain similarities based on the input description. This phase allows for exploring a wide range of images that may match the character descriptions in the screenplay. Selecting visual references for the character involves repeating this step by pressing the generate button multiple times until an image that aligns with the screenplay's requirements is obtained. In this research, the visual representation that most closely resembles the main character, Lanang, is shown in Fig. 3.



Fig. 3: The Final Selection of Lanang's Character Visual Reference  
(Source: playground.com)

As shown in the findings, text-to-image generation not only generates aesthetically diverse visual representations, but also reveals the sensitivity of the artificial intelligence system to character descriptions, where slight variation in input parameters can significantly alter facial representation, body posture, and ethnic attributes. This indicates that the quality of character visuals relies heavily on accurate character descriptions, making the understanding of character dimensions a key factor in visualization success.

## 5.0 Discussion

The findings of this research indicate that artificial intelligence holds significant potential as a tool in the film pre-production process, particularly for character visualisation. The use of artificial intelligence as a character visualisation tool has the potential to transform the traditional casting process, which frequently relies on photos or images of well-known actors. By converting character descriptions into visual representations, filmmakers can produce visuals that more accurately reflect the screenplay's characters, rather than relying solely on images of celebrities. Furthermore, text-to-image generation can support filmmakers in obtaining visual character references quickly and accurately, especially for those with limited budgets, thereby avoiding the use of casting agencies. For filmmakers who use agency services, visual character references generated by artificial intelligence can facilitate discussions in determining the most suitable actors. One benefit of character visualisation using artificial intelligence is that it can bridge the subjective differences between screenwriters and casting directors, particularly regarding aesthetic and cultural preferences. Differences in understanding of ideal characters, such as the varying concepts of beauty, can be minimised by having a visual reference based on the three dimensions of the character. Ideally, these visualisations should be prepared in the early phases of screenwriting or during character profiling, ensuring the entire production team shares the same perception and making the casting process more effective, accurate, and aligned with the overall vision of the film.

Based on the research process, finding character visual references conventionally requires several workdays, whereas character visualization using artificial intelligence can be completed in just a few hours. Although this data is contextual and has not been measured in a controlled experiment, the observed difference in time provides early empirical evidence of the potential for artificial intelligence to accelerate the early stages of the casting process.

However, this research also noted some limitations of using AI, especially in the early days of system development. When this research was conducted in mid-2023, the artificial intelligence system still exhibited limitations in visual data, particularly regarding accurate ethnic representation. Initially, when generating visual representations for characters of Javanese ethnicity, the system refers to the physical characteristics of East Asian individuals. Indonesian individuals have different physical features across the archipelago, from Sabang to Merauke. Acehese ethnic groups' physical characteristics closely resemble those of Central Asian individuals; Dayak ethnic groups share similarities with East Asian individuals; Papuan ethnic groups exhibit features more akin to Pacific Islander or African individuals; and Javanese ethnic groups' physical characteristics resemble those of Southeast Asian or Austronesian populations, exhibiting phenotypic features that are intermediate between East Asian and Pacific Islander groups. The limited visual data was addressed by aligning the generated images with various ethnic groups available from the artificial intelligence platform and refining the text prompt repeatedly to achieve a visual representation that matched the screenplay's requirements. The Lanang character in the Mbarang story is of Javanese ethnicity, but due to the limited visual data available in the system at that time, the closest physical

characteristic resemblance was with South American ethnic groups. Today, the visual generation of diverse ethnicities is likely easier due to the increased availability of visual data references in artificial intelligence models. The visual databases of various artificial intelligence platforms are becoming increasingly diverse, enabling more precise representations of characters from various cultural and ethnic backgrounds. This opens new opportunities for Indonesian filmmakers to utilise artificial intelligence in designing characters that fit local identities.

## 6.0 Conclusion and Recommendations

This study provides an initial exploration of the utilisation of text-to-image generation in supporting the film pre-production process. The results of this study demonstrate that artificial intelligence, particularly text-to-image generation, can be an effective tool for creating visual character references in film casting. Playground.com's artificial intelligence platform can generate character images based on physiological and sociological descriptions with considerable accuracy, which helps accelerate the process of matching actors with the characters specified in the screenplay. This method is relevant for independent film production or film education, where time and funding limitations are often the main constraints.

However, only the physiological and sociological dimensions of the character are prioritised, as images generated through text-to-image generation cannot adequately represent the psychological aspects of a character. Therefore, character visualisation via artificial intelligence remains limited to physiological and sociological characteristics at the time of research. Further research could extend this study by employing more advanced artificial intelligence, such as text-to-video generation or character animation, to more comprehensively represent the psychological dimension of the character.

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## Paper Contribution to the Related Field of Study

This article contributes to developing interdisciplinary studies between film production and artificial intelligence, especially in the pre-production phase. This research adopts an exploratory approach to using text-to-image generation as a tool in the casting process, which remains underexplored. This study provides a practical framework for filmmakers, particularly in independent and educational settings, to bridge the gap in character interpretation between screenwriters and casting directors.

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