

## Analyzing Light–Atmosphere Patterns Across Film Genres: A Student-Perception Based Content Analysis and AI-Assisted Visual Modeling

Hilal Türkdoğdu<sup>1</sup>, Dilek Yasar<sup>2</sup>, Ufuk Fatih Küçükali<sup>3</sup>

### Abstract

Although extensive theoretical discussions examine how interior atmospheres are constructed in cinema, particularly how lighting and illumination guide viewer perception, comprehensive empirical studies that explore how these atmospheric elements are understood and conceptualized by design students across different film genres remain limited. Addressing this gap, the present study investigates how 102 students enrolled in the Form Light Color course in the Interior Architecture Department at Istanbul Aydın University systematically analyzed interior scenes from five film genres: horror and thriller, romance, comedy, fantasy, and science fiction, focusing specifically on lighting and illumination. The research employs a multi stage methodological framework consisting of data collection, qualitative coding, thematic content analysis using MAXQDA, word cloud modelling, and artificial intelligence based visual generation through the GEMINI system. The findings reveal distinct patterns of light and atmosphere for each genre. Horror and thriller films rely on low key and shadow intensive lighting. Romance films emphasize warm and diffused illumination. Comedy films frequently use bright and evenly distributed lighting. Fantasy films highlight colorful, magical, and multidirectional illumination. Science fiction films are characterized by neon based, cold, and technologically structured lighting schemes. By bringing together student perception, qualitative analysis, and artificial intelligence supported visual modelling, this study offers a novel methodological contribution to both film studies and design education literature. The findings provide a deeper understanding of how cinematic lighting and atmosphere are constructed, interpreted, and visually represented.

**Keywords:** *Cinematic Light Analysis; Interior Atmosphere; Interior Architecture Education; Film Genres and Lighting.*

### Introduction

Lighting and illumination play a central role in shaping interior atmospheres in cinema. They guide the emotional intensity of the narrative, transform spatial perception, and construct the sensory environment experienced by the viewer. Bordwell and Thompson (2019) emphasize that light is not merely a tool that provides visibility but also a core element that reveals the dramatic potential of cinematic space. Similarly, Brown (2016) describes cinematographic lighting as the emotional architecture of the scene and notes that lighting strategies used across different film genres directly influence how viewers perceive and interpret the visual environment.

The concept of atmosphere has become increasingly prominent in both architectural studies and film theory. Böhme (2017) defines atmosphere as a quality that can be sensorially perceived within space, while Zumthor (2006) emphasizes the decisive role of sensory coherence in shaping spatial experience. Edensor (2012) further argues that light operates as a medium that evokes spatial affect and emotional resonance. Accordingly, in cinema, atmosphere is constructed through the color, intensity, and distribution of light. Within this context, lighting plays a crucial role in producing the intended spatial tone in genres such as horror and thriller, romance, comedy, fantasy, and science fiction. For example, Kakar and Muzafar (2025) demonstrate that reduced and dark illumination levels heighten feelings of mystery, unease, and threat, and that low key lighting functions as one of the

<sup>1</sup> Department of Interior Architecture, Istanbul Aydın University, Istanbul, Turkey, Email: hkarakas@aydin.edu.tr, (Corresponding Author)

<sup>2</sup> Department of Interior Architecture, Istanbul Aydın University, Istanbul, Turkey, Email: dilekyasar@aydin.edu.tr

<sup>3</sup> Department of Architecture, Istanbul Aydın University, Istanbul, Turkey, Email: ufkucukali@aydin.edu.tr

primary mechanisms for generating tension in horror films. Similarly, discussions on genre-oriented cinematography highlight that romantic films commonly employ soft and warm lighting arrangements, which enhance intimacy and emotional closeness between characters and viewers (The Power of Lighting: How to Use Light to Tell Your Story, 2023). Telotte (2001) examines the distinctive visual conventions of science fiction cinema, which are shaped through technologically constructed and artificial environments. Despite these theoretical contributions, empirical research that integrates analyses of lighting atmospheres in film interiors with perspectives from viewers, particularly in the context of interior architecture education, remains scarce. This absence constitutes the central research gap addressed by the present study.

The aim of this study is to examine how 102 students enrolled in the Form Light Color course, a compulsory sixth semester course in the Interior Architecture Department at Istanbul Aydın University, analyze the interior atmospheres of films selected from five major genres, namely horror and thriller, romance, comedy, science fiction, and fantasy, with a specific focus on lighting and illumination. The study further seeks to represent the conceptual clusters derived from these analyses through artificial intelligence supported visual generation. In doing so, the research proposes an original model that integrates pedagogical perspectives, cinematographic interpretation, and creative technological tools.

The study offers two major contributions to the scholarship on film space and lighting. First, it approaches the analysis of light and atmosphere not solely through professional cinematic interpretations, but through the perceptual frameworks and analytical outputs produced by design students. In this respect, the study aligns with Pallasmaa's (2005) discussions on the sensory construction of space and supports the view that viewers perceive lighting as an emotional and atmospheric component rather than merely a technical element. Second, the transformation of lighting related concepts into artificial intelligence generated visual outputs positions this research as one of the pioneering attempts to merge film space analysis with contemporary digital production methodologies. This approach resonates with Manovich's (2013) theories on digital aesthetics and algorithmic visualization, offering a novel methodological direction for future investigations.

The significance of this study lies in its ability to make the lighting and atmospheric characteristics of film genres visible both within a pedagogical framework and through contemporary digital production processes. The students' conceptual examination of the relationship between space and light enables them to develop a cinematic vocabulary, and the subsequent transfer of these conceptualizations into artificial intelligence systems introduces a new dimension to creative design competencies. This constitutes an important contribution to the educational literature. Edensor's (2012) emphasis on the affective and spatial influence of light also reinforces the theoretical foundation of this research.

The problem addressed in this study concerns how the relationship between lighting, space, and atmosphere is defined through the perceptions of viewers and students across different film genres, and how these definitions are reflected when reproduced through artificial intelligence. In line with this focus, the research is guided by the following questions:

- How do students describe interior atmospheres in different film genres in terms of lighting and illumination?
- How do these descriptions form genre specific patterns within horror and thriller, romance, comedy, science fiction, and fantasy categories?
- When student generated conceptual clusters are visualized through word cloud techniques, which dominant atmospheric groupings emerge?
- When these conceptual clusters are provided as input to an artificial intelligence system such as Gemini, to what extent do the generated cinematic interior scenes correspond to student perceptions?
- Do genre based lighting and atmospheric themes demonstrate a coherent structural alignment between student interpretations and artificial intelligence generated outputs?

## **Methodology**

This research is grounded in a multi stage qualitative content analysis model designed to examine how cinematic interior atmospheres are perceived within the context of lighting and illumination. The study sample consists of 102 undergraduate students enrolled in the Form Light Color course, a required sixth semester course in the Interior Architecture program at Istanbul Aydın University. The

research process was conducted in five main stages, which included data collection, conceptual coding related to spatial atmosphere analysis, thematic content analysis, word cloud modelling, and artificial intelligence supported visual production.

### **Data Collection Phase**

In the initial phase of the research, students were asked to select one film from each of five categories, namely horror and thriller, romance, comedy, science fiction, and fantasy. The selections and accompanying explanations were gathered through a Google Form prepared and distributed by the researcher. An examination of the students' reasons for selecting particular films revealed several genre specific patterns.

- Students who selected horror and thriller films typically referred to spatial motivations such as a dark atmosphere, old interior settings, psychological tension, rustic and unsettling domestic environments, a sense of isolation, and threatening lighting arrangements.
- Most fantasy film selections were justified with references to magical spaces, colorful visual aesthetics, mystical atmospheres, and supernatural symbols.
- In romance film selections, students highlighted warm atmospheres, intimate lighting conditions, and spaces that evoke emotional closeness.
- Comedy films were chosen primarily due to bright, energetic, cheerful, and colorful interior environments.
- Science fiction films were preferred because of their representations of advanced technology, neon illumination, sterile interior spaces, and futuristic aesthetic qualities.

### **Interior Atmosphere Analysis Task**

In the second stage of the study, students were instructed to systematically analyze the interior spaces of the films they had selected, focusing specifically on lighting and illumination. The analytical emphasis of this research is centered on lighting and illumination as the primary atmospheric component. The light oriented descriptions produced by the students for each film genre constitute the qualitative data set of the study.

### **Qualitative Content Analysis and MAXQDA Coding Process**

The collected student descriptions were imported into the MAXQDA Analytics Pro software for qualitative content analysis. At this stage, all statements were examined line by line. Recurrent concepts, descriptive expressions related to lighting use, and atmospheric themes were identified through open coding. These initial codes were subsequently grouped into subthemes and then into broader overarching themes. The characteristic lighting related themes identified for each film genre were structured as follows:

- Horror and thriller: low key lighting, deep shadows, flickering illumination, claustrophobic lighting conditions, emergency red light, silhouette based backlighting, and related concepts
- Romance: soft lighting, warm color temperature, candlelight glow, diffused daylight, emotional softness, and similar descriptors
- Comedy: high key lighting, evenly distributed illumination, bright color based accents, uplifting brightness, and related expressions
- Fantasy: mystical glow, iridescent luminosity, magical diffusion, bioluminescent textures, chromatic light beams, and similar atmospheric features
- Science fiction: cold temperature neon lighting, linear LED pathways, algorithmic patterns of illumination, sterile brightness, holographic glow, and comparable visual characteristics

This coding process resulted in the creation of five distinct conceptual clusters of light and atmosphere, each corresponding to one of the film genres.

### **Word Cloud Technique**

The thematic concept clusters generated through the coding process were visualized using the WordClouds platform. For each film category, the most frequently repeated concepts were emphasized, while less frequent yet thematically meaningful terms were also incorporated in order to preserve

conceptual coherence. This procedure enabled the construction of genre specific maps of light oriented atmospheric descriptors.

WordClouds employs a set of mathematical and algorithmic procedures to determine the size, position, and spatial distribution of words entered as input data. In this study, the distribution of content analysis codes derived from MAXQDA for the five film genres served as the primary data source. The program calculates the weight of each word through standard frequency-based computation, where the relative frequency determines the size of the word within the cloud. The weighting function can be expressed as:

$$TF(w_i) = \frac{\text{Number of occurrences of the word in the text}}{\text{Total number of words}}$$

Accordingly, the more frequently a term appears in the coded dataset, the larger and more visually prominent it becomes in the resulting word cloud. This method supports an intuitive and data driven visualization of the conceptual structure underlying students' lighting-based interpretations of cinematic interior atmospheres.

### **Artificial Intelligence Based Visual Generation (GEMINI)**

In the final stage of the study, the conceptual lists produced for each film genre were entered into the visual generation module of Google GEMINI. Each scene requested from GEMINI was designed:

- to rely exclusively on the concepts generated by the students
- was guided to reflect the characteristic lighting atmosphere of the corresponding genre.

This stage established a bidirectional epistemological bridge between student perception and artificial intelligence, offering a novel methodological model for the light centered interpretation and representation of cinematic interior atmospheres.

## **Findings**

### **Horror and Thriller Film Interiors**

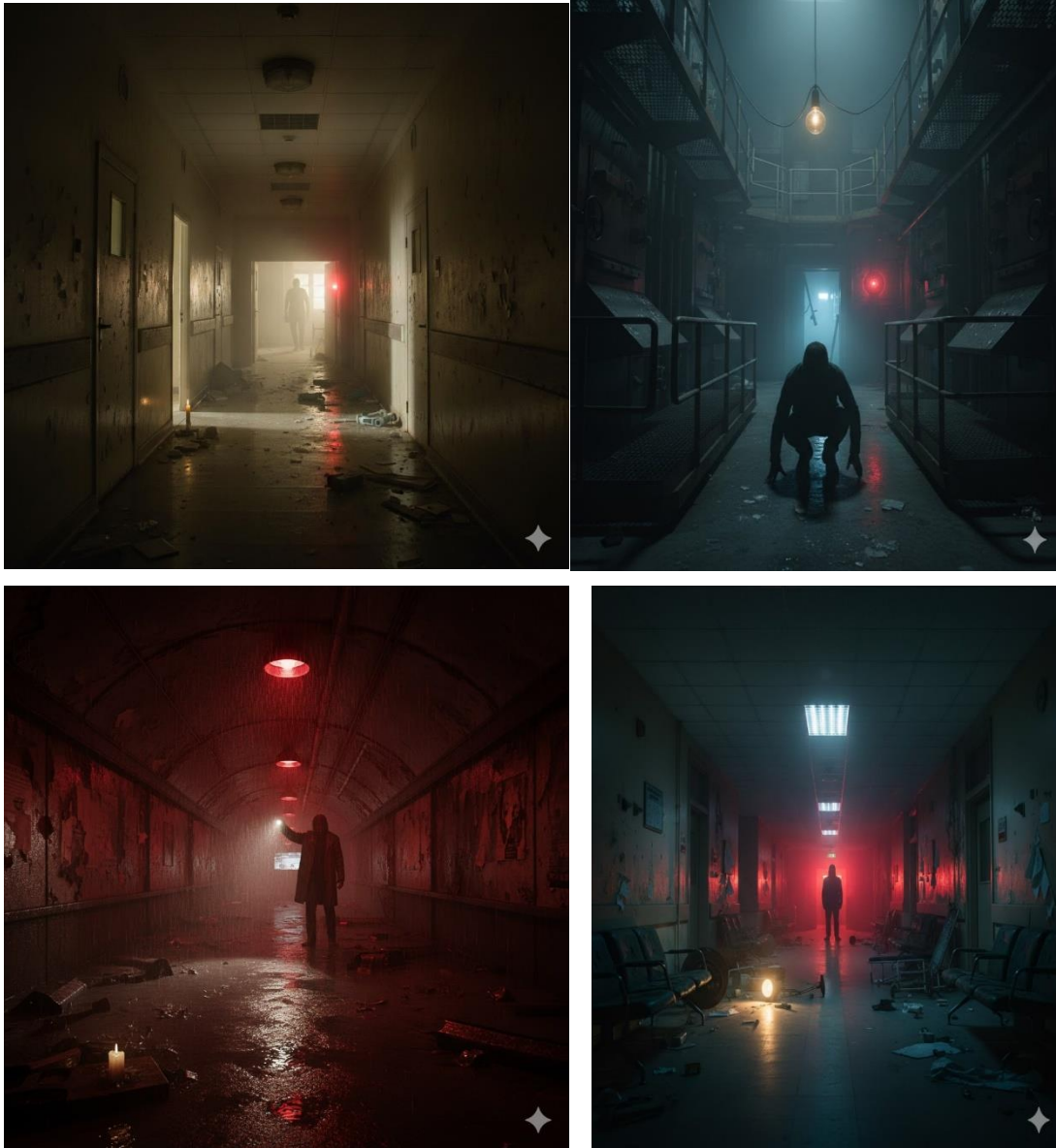
The first genre examined in the study is the horror and thriller category. The students' analyses of this genre reveal a comprehensive conceptual framework that demonstrates how lighting is perceived as a central atmospheric component within these films. Students predominantly described horror and thriller interiors through fundamental lighting strategies that reinforce dark and threatening atmospheres, such as low levels of illumination, strong contrasts between light and shadow, deep and fragmented shadow formations, uneven distribution of light, and an overall sense of underexposure. With regard to the source and direction of light, students highlighted several atmospheric mechanisms, including silhouette effects created through backlighting, tension produced by lateral illumination, discomfort associated with overhead lighting, flickering or unstable light sources, and unexpected beams emerging from hidden points within the space. In terms of psychological impact, students identified claustrophobic illumination, anxiety inducing dimness, threatening backlighting, unsettling transitions between light and shadow, shadows that create a sense of anticipation, and dark environments that intensify suspense as defining characteristics of the genre. Students also frequently referred to the interaction between light and material surfaces, noting the absorption of light by rough textures, the tension created through reflective materials, the shimmering effect of wet or metallic surfaces, the ambiguity of translucent materials, and the atmospheric diffusion produced by light interacting with fog. Observations concerning temporal variations in lighting included pulsating illumination, sudden blackouts, gradual fading, abrupt increases in contrast, and unpredictable shifts in light movement. Iconographic lighting symbols commonly associated with the genre were also identified, such as the isolating beam of a flashlight, the tension created by candlelight, deceptive glimmers perceived from a distance, stroboscopic visual disturbance, emergency red tones, and monochromatic spectral lighting. Overall, these findings indicate that students perceive lighting in horror and thriller films not merely as a technical component of visibility, but as a primary cinematographic device that constructs spatial narrative, generates psychological tension, and defines the atmospheric identity of interior environments. The conceptual cluster associated with the horror and thriller genre is presented in Figure 1.



Figure 1. Concept cloud for the horror-thriller movie category

#### AI Generated Visual Representations of the Horror and Thriller Genre

The artificial intelligence generated scenes produced from the conceptual word clouds in this study provide concrete visual representations of how students perceive lighting and atmospheric qualities within the horror and thriller genre. The visuals clearly exhibit themes such as low illumination, strong contrasts between light and shadow, deep and fragmented shadow formations, and an overall sense of underexposure. The dominance of dark tonalities, along with red emergency lights extending along corridor like spatial configurations and flickering or directionally ambiguous light sources, aligns closely with the students' descriptions of a threatening atmosphere, suspense-oriented darkness, and anxiety inducing dimness. The scenes also incorporate the iconographic lighting symbols characteristic of the horror and thriller genre. Fragmented illumination produced by a flashlight beam, deceptive glimmers perceived from distant points, red lighting elements that evoke a stroboscopic effect, and minimal ceiling lighting that anticipates sudden blackouts all demonstrate the translation of students' conceptual categories into coherent spatial compositions. These visual outputs confirm that the thematic patterns derived from the content analysis were effectively transferred into artificial intelligence based spatial representations. Consequently, they allow for a comparative interpretation of how lighting constructs cinematic interior atmosphere through both the perceptual frameworks of students and the synthetic visual renderings generated by the artificial intelligence system (Figure 2).



**Figure 2.** Artificial intelligence scenes generated from concept clouds – horror and thriller movie scenes.

### **Romantic Film Interiors**

Students also conducted evaluations of interior spaces in romantic films. These evaluations demonstrate that, within this genre, lighting is perceived as a fundamental atmospheric component that strengthens emotional intimacy by creating a soft, warm, and inviting ambience. Students predominantly characterized romantic film interiors through a lighting language defined by soft lighting, warm color temperatures, diffused illumination, natural daylight, subtle shadowing, and glowing accents—elements that collectively produce gentle transitions and a serene visual environment. Regarding the direction of light, students frequently referred to frontal soft light, ambient fill light, large-window daylight, golden-hour tones, and bounce lighting; they emphasized that the genre’s pronounced reliance on natural light sources functions as a device that “reinforces sincerity.” In relation to psychological effects, concepts such as comfort-inducing luminosity, intimacy-building warmth, emotional softness, romantic glow, and calming luminance were repeatedly highlighted. Furthermore, the interaction between light and materiality in romantic spaces was described through elements such as wood textures reflecting softness, fabric-based light diffusion, pastel-toned surfaces, matte reflections, and candlelight–glass interplay. Students noted that light, when combined with porous, natural, and matte materials, enhances the emotional atmosphere of the space. Collectively, these findings indicate that students position lighting in the romantic genre as a cinematographic tool that





**Figure 4.** Artificial intelligence scenes generated from concept romantic movie scenes.

### **Comedy Film Interiors**

Students' evaluations of the comedy genre indicate that lighting in these films typically produces a vibrant and open atmosphere characterized by high brightness, evenly distributed light, shadow free or low shadow environments, and colorful energetic tonalities. Within this framework, high key lighting, bright ambient light, even illumination, color pop lighting, and clean highlights were identified as defining lighting components of the genre. Regarding light direction and source, students emphasized that frontal illumination, overhead soft wash, broad source lighting, and uniform daylight contribute to a dynamic and cheerful visual tone by distributing light across large volumes of space. In psychological terms, uplifting brightness, clarity inducing light, playful luminosity, and cheerful chromatic accents were identified as core concepts shaping the lighting atmosphere of comedy films. In their comments on the relationship between light and materiality, students noted that reflective surfaces such as glossy textures, polished tiles, and satin fabrics enhance the sense of energy in the environment, while materials with high color saturation reinforce comedic effect by reflecting light more vividly. These findings demonstrate that students conceptualize lighting in the comedy genre as a cinematographic device that generates liveliness, openness, positivity, and movement. The conceptual cluster related to the comedy film category is presented in Figure 5.



**Figure 5.** Concept cloud for the comedy movie category

**AI Generated Visual Representations of the Comedy Genre**

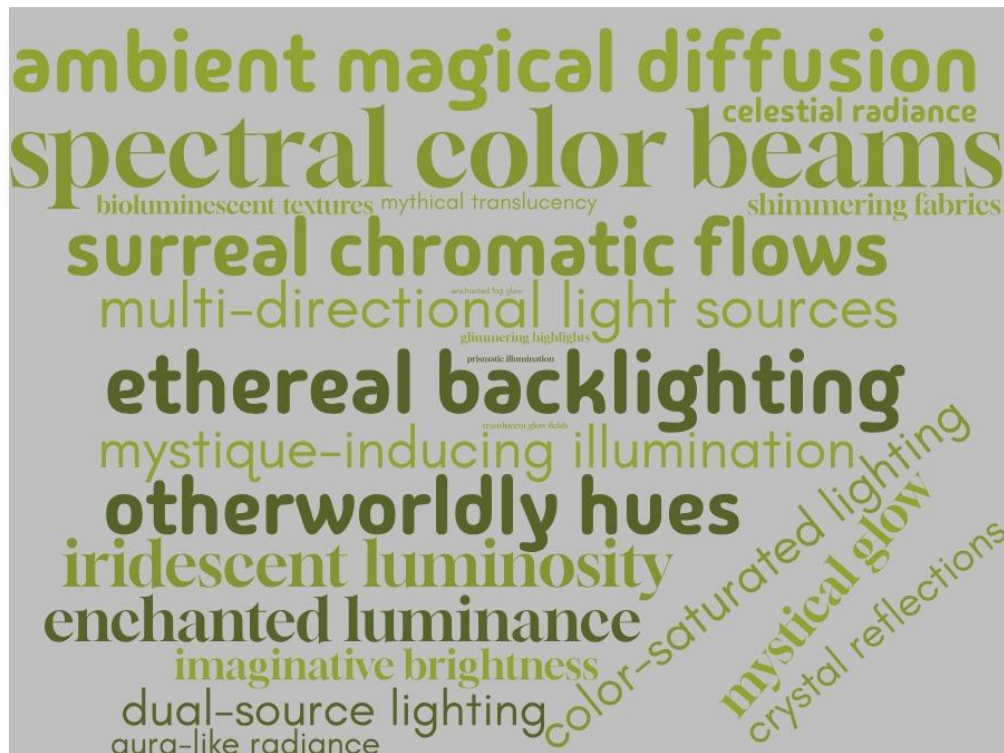
The thematic lighting concepts derived from students' analyses of the comedy film category, including high brightness, even light distribution, heightened visibility, vivid color accents, and cheerful and dynamic atmospheres, are clearly reflected in the AI generated scenes. The depicted interiors exhibit a lighting scheme consistent with the characteristic high key light usage of the genre, supported by broad source soft illumination, shadow free or minimally shadowed areas, and pastel yet vibrant color combinations. In particular, large surface lights positioned above the scene ensure homogeneous illumination, while neon elements and colorful decorative lights reinforce the energetic and playful nature of the environment. All concepts frequently emphasized by students, such as color pop lighting, bright ambient light, uplifting brightness, and playful luminosity, are represented with high accuracy in the visuals. An examination of the emotional tone of the environments indicates that each scene is structured around themes of positivity, sincerity, dynamism, and social closeness. For instance, soft frontal illumination in the cafe scene, broad ceiling lighting in the office interior, bright natural daylight in the kitchen scene, and the extensive use of diffuse daylight in the shopping mall directly correspond to the essential spatial narrative components of the comedy genre. The shadow free, evenly distributed, and clear lighting enhances the spaciousness of the interiors, strengthens visual legibility, and evokes a sense of optimism in the viewer. Accordingly, the AI generated visuals provide a coherent representation that aligns with the light atmosphere patterns identified through the students' conceptual analysis, as presented in Figure 6.



Figure 7. Artificial intelligence scenes generated from comedy movie scenes.

### Fantasy Film Interiors

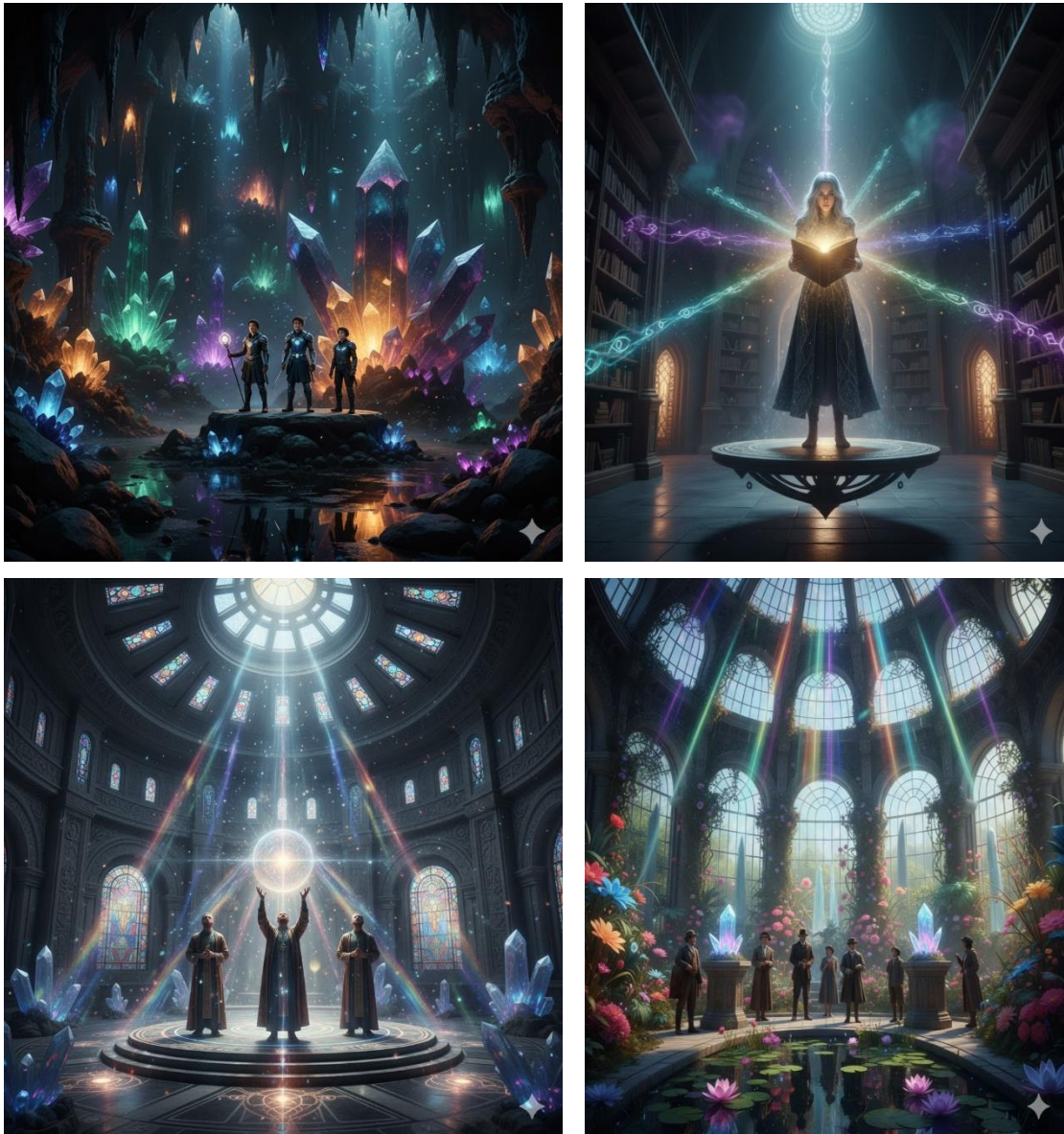
Analyses of the fantasy film category reveal that students perceive lighting in this genre as a fundamental atmospheric device that shapes the sense of the supernatural environment. Students frequently associated fantasy interiors with visually rich and extraordinary lighting configurations such as color saturated lighting, mystical glow, iridescent luminosity, ethereal backlighting, multidirectional light sources, and otherworldly hues. In comments regarding light direction, students highlighted concepts such as rim lighting, dual source lighting, glimmering highlights, floating points of light, and ambient magical diffusion, noting that these lighting strategies construct a spatial composition that transcends physical reality. In terms of psychological effects, students stated that fantasy environments stimulate imagination through mystique inducing illumination, imaginative brightness, aura like radiance, and surreal chromatic flows. With respect to the interaction between light and materiality, elements such as crystal reflections, shimmering fabrics, ancient stone and light interplay, bioluminescent textures, and mythical translucency were frequently emphasized. The conceptual cluster related to the fantasy film category is presented in Figure 7.



**Figure 7.** Concept cloud for the fantasy movie category

### **AI Generated Visual Representations of the Fantasy Genre**

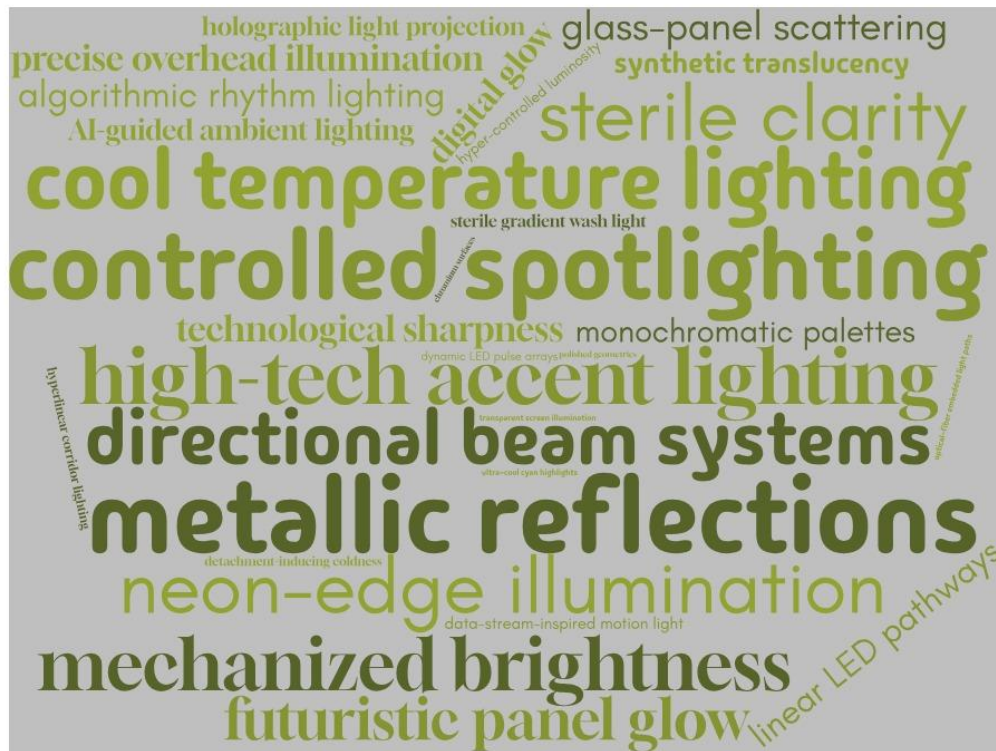
The AI generated fantasy film scenes produced in line with the conceptual themes identified by students strongly reflect the lighting and atmospheric components emphasized in their analyses, including color saturation, magical radiance, iridescent luminosity, multidirectional light sources, auratic illumination, bioluminescent effects, and mythical translucency. The subterranean cavern scene surrounded by crystals presents an intensified representation of color saturated lighting, bioluminescent textures, and floating points of light, demonstrating that light in fantastic narratives operates not only as an illuminating device but also as a magical element that transforms the ontology of the space. Similarly, in the library scene featuring a character performing magic, elements such as ethereal backlighting, mystical glow, and aura like radiance reinforce spatial dramatization while making the frequently referenced sense of otherworldliness in the student analyses perceptible as an abstract atmospheric layer. The domed interior and the enchanted garden scene collectively present the lighting characteristics identified by students in the fantasy genre, including surreal chromatic flows, multidirectional light sources, prismatic illumination, and mystique inducing diffusion within a cohesive aesthetic structure. The multicolored beams of light filtering through the dome enhance the ritualistic sanctity of the scene, whereas the enchanted haze, crystal reflections, and shimmering fabrics in the garden atmosphere highlight the capacity of light to construct a supernatural ecosystem. When these scenes are evaluated together, it becomes evident that the lighting themes derived from the students' conceptual analyses have been translated into spatial visualizations by the AI in a coherent manner, thereby confirming the light and atmosphere patterns characteristic of the fantasy genre at both conceptual and visual levels, as presented in Figure 8.



**Figure 8.** Artificial intelligence scenes generated from fantasy movie scenes.

### **Science fiction Film Interiors**

Students' evaluations of science fiction films reveal that lighting in this genre is perceived as a visual code representing high technology, sterile geometries, and spatial order governed by artificial intelligence. In this context, students frequently described science fiction environments through elements such as cool temperature lighting, neon edge illumination, digital glow, high tech accent lighting, monochromatic palettes, and directional beam systems. Regarding light direction, students highlighted linear LED pathways, controlled spotlighting, algorithmic rhythm lighting, futuristic panel glow, and precise overhead illumination as defining components of the genre. In terms of psychological impact, students articulated science fiction lighting through concepts such as detachment inducing coldness, hyper controlled luminosity, sterile clarity, technological sharpness, and mechanized brightness. With respect to the interaction between light and materiality, students frequently referred to metallic reflections, glass panel scattering, chromium surfaces, synthetic translucency, and polished geometries. These findings demonstrate that students conceptualize lighting in the science fiction genre as a primary visual component that constructs a sterile, systematic, futuristic, and mechanical atmosphere. The conceptual cluster related to the science fiction category is presented in Figure 9.



**Figure 9.** Concept cloud for the science-fiction movie category

### AI Generated Visual Representations of the Science-fiction Genre

The four visuals representing the science fiction genre show strong alignment with the concepts emphasized in the students' content analyses, including cool temperature lighting, neon edge illumination, linear LED pathways, high tech accent lighting, sterile clarity, and algorithmic rhythm lighting. In all scenes, the primary function of light operates not merely as illumination but as a visual representation of high technology, artificial intelligence, data flow, and digital spatial perception. The linear LED strips, directional light beams, and the homogeneous palette of blue and black tones constitute foundational components that construct the sterile, controlled, and technologically driven atmosphere characteristic of science fiction cinema. These visuals function as spatial manifestations of concepts frequently described by students such as detachment inducing coldness, hyper controlled luminosity, and technological sharpness. Each scene clearly demonstrates that spatial lighting in the science fiction genre is used as a tool that reinforces the experience of information density, digitalization, and advanced technological environments. In spaces such as command centers, laboratories, and holographic data rooms, lighting becomes an active design element used to highlight architectural features, guide user movement, integrate the physical environment with digital layers, and produce the aesthetic of the future. Notably, holographic light reflections, multidirectional light sources, cold reflections on metallic surfaces, and refractive effects on glass panels fully correspond to the themes identified by students, such as glass panel scattering, synthetic translucency, polished geometries, and photonic pulse accents. In this regard, the visuals strongly demonstrate that lighting in the science fiction genre functions not only as an atmospheric component but also as a fundamental narrative device that constructs the technological identity of the space, as presented in Figure 10.



**Figure 10.** Artificial intelligence scenes generated from science fiction movie scenes.

## **Conclusion**

This study proposes a holistic and multilayered method for understanding how cinematic interior atmospheres are perceived from the perspective of light and illumination. Data gathered from 102 students enrolled in the Form Light Color course, offered as a compulsory sixth semester course at Istanbul Aydın University, clearly demonstrate the influence of genre specific lighting strategies on audience perception. The films selected by the students and their explanations regarding these choices reveal that cinematic atmosphere is not incidental but is shaped through stylistic preferences directly related to the emotional and narrative structure of the selected films.

The results of the content analysis indicate that each film category possesses its own distinct set of lighting and atmospheric components. For instance, horror and thriller films were characterized by low illumination, fragmented shadows, flickering light sources, and threatening backlighting. Romantic films were defined by warm color temperatures, soft shadow transitions, diffused natural light, and glow effects that generate emotional intimacy. Comedy films produced cheerful spatial expressions through bright, evenly distributed, shadow free or low shadow illumination. Fantasy films were associated with multicolored light beams, iridescent reflections, magical radiance, and surreal light diffusions. Science fiction films were shown to structure space through cool toned neon lines, high technology panels, sterile white lighting, and digital rhythms. These findings demonstrate that lighting becomes a key atmospheric element that constructs the identity of each genre.

One of the most significant contributions of the study is the integration of student based conceptual themes with AI generated visual production. Genre specific concept pools were created using MAXQDA, visualized through the WordCloud method, and subsequently transformed into AI supported cinematic scenes using Google GEMINI. The resulting scenes exhibited a high level of correspondence with the concepts identified by the students. This methodological integration offers an innovative contribution to the literature by uniting data driven concept generation with AI supported spatial representation in the analysis of cinematic atmosphere.

The findings also reveal that the perception of cinematic interior space constitutes a holistic experience that operates not only on a visual level but also on emotional and psychological dimensions. In the students' interpretations, lighting was associated with meanings such as threat in the horror category, intimacy in romantic films, liveliness in comedy, enchantment in fantasy, and technological coldness in science fiction. This confirms that lighting is not merely a tool that renders the environment visible but a primary atmospheric determinant that constructs the emotional backbone of the genre.

Nevertheless, certain limitations of the study must be acknowledged. The dataset is limited to 102 students from a single university, and film selection is based on individual experience, which means the findings do not claim to represent all cinematic genres. Furthermore, although the AI generated scenes show high conceptual accuracy, they remain subject to algorithmic aesthetic constraints and may not fully reflect human visual perception. Finally, as the study focuses exclusively on light and illumination, other components that shape cinematic atmosphere such as sound, movement, camera angles, and rhythm were not included in the analysis.

Future research may therefore examine cross cultural variations in lighting patterns among genres by employing larger and more diverse samples. Additionally, the method can be expanded through a numerical validation model by comparing AI generated scenes with photometric measurements of real film scenes. The consistency between conceptual data and generated scenes may also be tested by comparing outputs produced by different AI models.

### **Acknowledgment**

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