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EXTENDED-ABSTRACT

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Exploring the Creative Potential of AI in Filmmaking

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Abstract

This workshop explores the integration of Artificial Intelligence (AI) into filmmaking, focusing on AI-driven video content analysis (VCA), AI-assisted content creation, and ethical considerations. As AI continues to reshape creative workflows, it opens new possibilities for filmmaking while raising important questions about human-AI collaboration. The workshop aims to bridge perspectives between creative practitioners, industry professionals, and AI researchers, fostering interdisciplinary dialogue on AI's evolving role in creative practice. We will discuss how AI-powered VCA advances film grammar analysis and audience cognition research, informing creative decision-making, and how generative AI supports production processes while expanding artistic possibilities. Additionally, we will examine how AI-driven analysis can inform ethical practices, alongside addressing the risks associated with generative AI. Through a combination of theoretical discussion and practical demonstrations, participants will gain hands-on experience with AI filmmaking tools while critically engaging with the future directions of AI-augmented creativity.

CCS Concepts

• **Human-centered computing** → **Empirical studies in collaborative and social computing**; • **Computing methodologies** → **Computer vision**; • **Applied computing** → **Media arts**.

Keywords

Video Content Analysis, Generative AI, AI Ethics, Film Cognition, Human-AI Co-Creation

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1 Workshop Topic

The integration of Artificial Intelligence (AI) into filmmaking is advancing rapidly, impacting both technical processes and creative decision-making. Traditionally, AI has been used for automation in tasks such as video editing, colour grading, and visual effects [56, 60]. However, recent developments in machine learning models, generative AI, and audience cognition modeling have expanded its role, making AI not just a tool for efficiency but also a collaborator in creative workflows [26, 38, 43, 61]. As AI becomes more capable of analysing cinematic elements [12, 40, 53], generating content [1, 7, 46, 62], and modeling audience perception [35, 36], there is a growing need for structured dialogue between AI researchers, filmmakers, and media professionals to explore its implications, challenges, and opportunities [11, 25, 47, 61].

This workshop will address three key dimensions: *AI-driven video content analysis*, *AI-assisted content creation*, and *ethical considerations in AI filmmaking*. Video content analysis (VCA) enables AI to interpret cinematic language, providing insights into shot composition, editing styles, and audience engagement through machine perception and cognition models. AI-assisted content creation positions AI as a co-creative partner, expanding possibilities across storytelling, visual design, and sound while inviting reflection on how creative roles and responsibilities evolve in collaboration with AI. Ethical considerations focus on responsible AI usage, including issues of bias, data privacy, and content moderation to ensure AI-driven filmmaking remains fair, accountable, and context-aware.

Through a combination of presentations, demonstrations, and discussions, this workshop aims to provide participants with both theoretical understanding and practical experience in AI-augmented filmmaking. By exploring AI's impact on perception, generation, and ethical decision-making, the workshop fosters interdisciplinary collaboration and contributes to shaping responsible AI practices in creative industries.

1.1 Workshop Objectives

This workshop aims to provide participants with a deeper understanding of AI's evolving role in filmmaking, with a focus on perception, content generation, and ethical considerations. The primary objectives are:

- To examine AI-driven video content analysis (VCA) and how it assists filmmakers and film theorists in analyzing design decisions made during the filmmaking process and over film history, culture and genres including shot composition, edit pacing, visual and sound design and, increasingly narrative and semantic features.
- To explore the potential of emerging cognitive models of audience responses to video content, such as saliency models of attention, affect/emotion/sentiment detection systems and models of event and narrative comprehension. Such models are beginning to make it possible for filmmakers/theorists to predict average audience responses to film stimuli without running costly and time-consuming behavioral experiments or imprecise test screenings.
- To understand the role of AI-assisted content creation in filmmaking workflows, and how AI can act as a co-creative partner across scriptwriting, scene design, editing, and beyond.
- To provide hands-on experience with AI tools for both perception and generation, enabling participants to experiment with their application in creative practice.
- To discuss ethical challenges in AI filmmaking, including bias, inclusivity, data responsibility, and the use of VCA in content moderation.
- To foster interdisciplinary collaboration between AI researchers, filmmakers, and media scholars, encouraging dialogue on creative agency and best practices in AI-augmented creativity.

2 Workshop Themes

2.1 AI in Video Content Analysis: Perception and Audience Cognition

Manual annotation and qualitative assessments of video frames have long been used to understand directorial style, pacing, and shot composition of film products [8, 48]. However, the increasing complexity of audiovisual datasets and volume of video content produced online daily has rendered purely manual approaches impractical for research in film analysis and digital humanities. AI-powered Video Content Analysis (VCA) provides a scalable, data-driven alternative, leveraging machine learning to detect patterns, analyse visual structures, and model audience affection and cognition in cinematic works.

VCA enables a systematic breakdown of key visual and temporal elements that influence audience perception. Vision-based models can classify shot types [12, 51], track camera level and angle [50], and evaluate scene composition based on aesthetic principles and established film grammar. While shot boundary detection algorithms quantify pacing and rhythm, helping editors refine cinematic flow, deep learning techniques identify framing methods that enhance emotional tone, influencing the film's mood and immersing the audience in the narrative [4]. By integrating these automated processes, filmmakers can ensure greater consistency in visual storytelling while streamlining the editing workflow.

Beyond structural analysis, AI-powered cognitive models contribute to creative decision-making by modelling audience cognition, approximating the multi-stage extraction processes involved in meaning making and human experience of a film. Saliency prediction models based on eye-tracking studies forecast focal points within a frame, enabling directors and editors to enhance visual composition for maximum viewer engagement [55]. Sentiment analysis and affective computing techniques measure emotional responses to specific cinematic choices, providing data-driven guidance for refining colour grading, shot selection, and scene composition [6]. Emerging techniques such as fMRI and neural activity measurement [41, 42] further enhance our understanding of how audiences process visual data and storytelling, allowing for more precise content adaptation.

Workshop participants will gain experience with VCA tools and demos, applying automated shot type classification, camera usage recognition, and motif analysis across different movie genres and film directors [58]. Discussions will explore how these technologies streamline editing, support artistic intent, and offer empirical insights into audience perception, fostering new creative approaches in filmmaking.

2.2 Generative AI for Content Creation

Generative AI provides filmmakers with powerful tools to accelerate content creation, enhance creative exploration, and optimize production workflows [57, 61]. These models automate tasks such as scriptwriting [9, 17, 44, 54, 59], scene composition [3, 5, 31, 67, 68], visual manipulations [2, 10, 19, 28, 33], and film scoring [15, 18, 32, 63–65], offering new possibilities for storytelling and artistic experimentation.

In screenwriting, AI-assisted tools generate script drafts and dialogues and suggest alternative plotlines, enabling filmmakers to iterate rapidly and explore multiple narrative possibilities [34]. For visual production, AI streamlines pre-visualization, scene design, style adaptation, and visual effects, reducing production costs and expanding aesthetic choices [13]. In film scoring, AI models compose adaptive soundtracks that match the narrative arc, emotional tone, and scene pacing, enabling rapid prototyping of musical themes and real-time score adaptation for interactive formats [14, 16]. AI-driven editing tools further enhance efficiency by automating continuity checks, suggesting optimal shot sequences, and refining pacing for greater narrative coherence [39]. However, contemporary AI models still encounter limitations concerning contextual understanding and emotional depth, necessitating deliberate human oversight to ensure meaningful and culturally sensitive storytelling [24].

Beyond automation, generative AI plays an active role in co-creative filmmaking, where the machine serves as both an ideation partner and an adaptive tool for refining creative outputs [9, 52]. However, while AI expands possibilities through iterative exploration, it remains essential to understand which elements creators wish to entrust to AI and which they prefer to control themselves.

Filmmakers may embrace automation for efficiency but retain hands-on involvement in areas tied to personal style, emotional nuance, or cultural sensitivity [66]. These human-AI boundaries are not fixed and merit open discussion, especially as tools continue to evolve.

This workshop will not only showcase the latest generative tools and walk participants through a complete creative workflow integrating these models, but also create a forum for critical reflection: how can AI tools be designed to respect and enhance creative agency throughout the creative process? By surfacing these questions in practical demonstrations and collaborative discussions, we aim to move toward more human-centred applications of AI in filmmaking.

2.3 Ethical Considerations in AI-Augmented Filmmaking

As AI becomes more deeply integrated into filmmaking workflows, ethical considerations must be central to its application. Issues surrounding data privacy, bias in AI-generated content, intellectual property rights, and the responsible use of AI in storytelling demand careful scrutiny [23, 29]. This section of the workshop will address both ethical challenges and AI-driven solutions for ensuring fairness, inclusivity, and responsible content creation.

One major concern is bias in AI models, which can result from imbalanced training data and lead to skewed representations in generated content [21, 45]. Film datasets used to train AI systems may reflect historical biases in character demographics, gender representation, or cultural depictions, potentially perpetuating stereotypes [27]. In addition, copyright and intellectual property concerns arise when generative AI models are trained on existing media without proper attribution or consent. The use of publicly available film scripts, imagery, and footage in model training raises legal and ethical questions regarding ownership, originality, and fair compensation for creators [49]. Addressing these challenges requires careful dataset curation, transparency in AI model development, and clear regulatory frameworks to protect creative rights while fostering innovation [20, 30].

AI also plays a crucial role in content moderation and ensuring responsible storytelling [22]. Audience cognition models can assist in ethical decision-making by evaluating the potential impact of film content on different demographic groups. Automated classification systems can assess age-appropriateness, cultural sensitivity, and emotional intensity, enabling filmmakers to make informed choices when targeting diverse audiences [37]. For instance, AI-driven content warning systems could potentially flag scenes containing intense psychological triggers or themes requiring audience discretion.

The workshop will explore these ethical dimensions through interactive discussions and case studies, prompting participants to consider AI's role in mitigating ethical concerns in filmmaking. Participants will also engage with AI tools designed for ethical content assessment, testing how automated classifiers evaluate thematic appropriateness, inclusivity, and potential risks. By the end of this session, attendees will gain a deeper understanding of how AI can be harnessed not only as a creative tool but also as an instrument for responsible and ethically-conscious filmmaking.

3 Workshop Audience and Promotion

This workshop is designed for participants from diverse disciplines, including AI researchers, filmmakers, media scholars, and professionals in the creative industries. As the integration of AI into filmmaking spans fields such as human-computer interaction, computational creativity, digital media, and cognitive science, we anticipate engagement from those interested in film production, scriptwriting, post-production, and media analysis. By inviting professionals working in AI-driven filmmaking and media production, the workshop will incorporate both academic and industry perspectives, fostering dialogue between researchers and practitioners.

To ensure broad participation, we will promote the workshop through multiple academic and professional channels. Calls for participation will be disseminated via ACM SIGCHI mailing lists, AI and media-related communities, and specialized forums such as AI and Arts, Computational Creativity, Digital Media conferences, and international film/media networks of which the organizers are a part including the Society for Cognitive Studies of the Moving Image and the Society for Cinema and Media Studies. Additionally, we will leverage institutional newsletters, social media platforms, and professional organizations in the film and creative sectors. This targeted outreach strategy will enable participation from individuals at different career stages, including early-career researchers, artists, and industry professionals.

To accommodate participants with varying technical backgrounds, the workshop will feature interactive discussions, demonstrations, and hands-on sessions. No programming experience will be required, ensuring accessibility for creative professionals, media scholars, and those new to AI. The workshop's multidisciplinary approach aims to encourage collaboration, providing participants with practical experience while fostering critical discussions on AI's role in filmmaking.

4 Workshop Organisation

This workshop is structured to balance theoretical discussion with practical engagement, enabling participants to explore AI's applications in video content analysis and generative content creation. It will be conducted virtually, making it accessible to an international audience. Through presentations, live demonstrations, and hands-on activities, attendees will gain direct experience with AI filmmaking tools and discuss their integration into professional workflows.

The workshop will begin with an overview of key themes, followed by structured presentations on AI-driven video content analysis and AI-assisted content creation. These sessions will feature live demonstrations of AI tools, showcasing their impact on creative decision-making, editing efficiency, and aesthetic refinement. The interactive format will allow participants to experiment with AI-driven filmmaking tools while engaging in discussions on their implications.

The University of the Arts London (UAL) team will provide organisational support for the workshop at Creative Computing Institute (UAL CCI). Workshop materials will be carefully prepared, with contingency plans to address potential technical challenges.

To ensure accessibility, the hands-on activities will focus on user-friendly interfaces and collaborative AI-assisted creation rather than programming-based tasks.

To facilitate engagement, we will use Zoom for live presentations and discussions, Miro for collaborative brainstorming, and Slack or Discord for ongoing communication before, during, and after the workshop. All relevant materials, including tool access instructions and supplementary resources, will be shared in advance. Key presentations will be recorded for asynchronous viewing to accommodate different time zones. This approach ensures that participants not only gain theoretical insights but also actively explore AI's potential in filmmaking through guided experimentation.

4.1 Workshop Provisional Schedule

The workshop is structured around two main sections: AI-driven video content analysis and AI-assisted content creation. Each session will include an introduction, live demonstrations, hands-on activities, and discussions on applications and ethical considerations. The tentative schedule is as follows:

- **9:00 - 9:15 AM**: Welcome and introduction to workshop objectives, themes, and structure.
- **9:15 - 10:45 AM**: *Section 1: AI in Video Content Analysis* – Presentations, live demonstrations, and interactive discussions on VCA methods, audience cognition modeling, and their applications in creative workflows including the ethics arising. Participants will explore AI-assisted film grammar analysis, shot scale classification, and camera usage analysis through guided experimentation.
- **10:45 - 11:00 AM**: Short break and informal networking.
- **11:00 - 12:30 PM**: *Section 2: AI-Assisted Creative Workflow* – Presentations and demonstrations of generative AI models integrated into the filmmaking workflow, including scriptwriting, visual design, music scoring, and editing. Participants will engage in hands-on activities to explore AI's role as a co-creative partner. Discussions will address the evolving dynamics of human-AI collaboration, creative agency, and ethical issues such as authorship, ownership, and cultural sensitivity.
- **12:30 - 12:45 PM**: Summary discussion on key insights, participant reflections, and open questions.
- **12:45 - 1:00 PM**: Closing remarks, follow-up collaboration plans, and next steps for research and practice.

4.2 Workshop Tools, Demonstrations, and Materials

To ensure a seamless and engaging experience, we will carefully select, verify, and test AI models and tools relevant to video content analysis and generative content creation, with a focus on those suited to the intended creative workflows. These tools will be drawn from both academic research and industry applications, ensuring their relevance for real-time demonstrations and hands-on exploration.

As the workshop will be conducted virtually, participants will need access to online meeting and collaboration tools. We will use Zoom for presentations and discussions, Miro for collaborative brainstorming and workflow mapping, and Slack or Discord for ongoing dialogue and resource sharing. Demonstrations will include both real-time processing and pre-prepared examples, illustrating AI's role in filmmaking while ensuring accessibility for all participants.

To facilitate hands-on engagement, we will prioritise browser-based or lightweight tools that minimise technical barriers. No coding experience will be required, and all necessary instructions will be provided in advance. Participants will have access to all referenced and supporting materials during the workshop, including research papers, industry reports, technical documentation, and model or project repositories (e.g., GitHub links), enabling them to further explore the methods and technologies presented. All sources will be clearly cited and made easily accessible.

We will establish contingency plans for potential technical issues by pre-testing all software and preparing alternative demonstration formats. Key demonstrations will also be recorded for later reference, allowing participants to revisit the content beyond the live sessions. Our preparation aims to ensure that all attendees, regardless of technical background, can actively engage with the workshop themes and explore AI's creative potential in filmmaking through structured, interactive sessions.

5 Deliverables and Outcomes

This workshop aims to generate practical insights, interdisciplinary discussions, and future research collaborations in AI-augmented filmmaking. A summary document will be compiled, capturing the key discussions, challenges, and emerging research priorities identified during the event. This document will serve as a resource for participants and the broader academic and creative communities.

Participants will gain theoretical and practical knowledge with AI filmmaking tools, allowing them to explore their potential applications in production workflows and creative storytelling. The workshop will highlight best practices for integrating AI into filmmaking while addressing ethical considerations such as bias mitigation, responsible content generation, and audience perception modeling.

Beyond the workshop itself, the event will foster long-term interdisciplinary collaborations. Participants will be encouraged to continue discussions and knowledge exchange through an online platform, facilitating networking and future project development. The insights and findings from the workshop may lead to collaborative research papers, new applications of AI in media production, and further explorations of AI's role in shaping the future of storytelling.

By bringing together AI researchers, filmmakers, and media scholars, this workshop will serve as a foundation for ongoing engagement between technological innovators and creative professionals. Through structured discussions, hands-on experimentation, and collaborative exploration, the event will contribute to shaping responsible and innovative AI practices in the film industry.

6 Organisers

Zhijun Pan, *Research Fellow, Creative Computing Institute, University of the Arts London, UK.* Zhijun Pan, also known as Aldrich, is a researcher in the field of AI storytelling, utilising multimodal AI models. He earned a first-class BSc in Artificial Intelligence and

Computer Science from The University of Edinburgh in 2023. Prior to his work as a Research Fellow and his current studies as a PhD student at the University of the Arts London, he studied at the Royal College of Art and worked at The University of Edinburgh and Ubisoft. His research has been published in ACM and IEEE conferences and journals. Additionally, projects he has contributed to have won the Red Dot Award and The Lumen Prize. He is also a Fellow of the Royal Society of Arts.

Dr. Sergio Benini, *Associate Professor, Department of Information Engineering, University of Brescia, Italy.* Dr. Sergio Benini earned his MSc in Electronic Engineering (cum laude) in 2000. He worked as a software analyst at Siemens Mobile Communications until 2003, before pursuing a PhD in Information Engineering at the University of Brescia. In 2005, he was appointed Assistant Professor and was promoted to Associate Professor in 2019 in the Department of Information Engineering. Dr. Benini has conducted research at several international institutions, including Siemens (Ulm, Germany), Queen Mary University of London (UK), British Telecom Research (Ipswich, UK), and the Vinča Institute of Nuclear Science (Belgrade, Serbia). In March 2012, he co-founded Yonder s.r.l., an academic spin-off specializing in Natural Language Processing, Cognitive Computing, and Machine Learning, where he serves as Chief Scientific Officer.

Prof. Mick Grierson, *Professor and Research Leader in Creative Computing, Creative Computing Institute, University of the Arts London, UK.* Mick Grierson is Research Leader at UAL Creative Computing Institute. His research explores new approaches to the creation of sounds, images, video and interactions through signal processing, machine learning and information retrieval techniques. Hardware and software based on his research has been widely used by world leading production companies, tech start-ups and artists including the BBC, Channel 4, Massive Attack, Sigur Ros, Christian Marclay, Martin Creed, Jai Paul and many others. He led the first BSc programmes in Creative Computing in the UK, and the first creative programming MOOC in the world, with over 250,000 learners. Work by his students and research group was instrumental in the development of the field known as Creative AI. He was Principal Investigator on the £1 million Artificial Intelligence project MIMIC, a partnership between Durham University, Sussex University, Goldsmiths College, and Google's Project Magenta, and is currently CO-I on the AHRC's Transforming Collections project (£3 million, led by Susan Pui San Lok). He was the Academic Research Lead for the £1million 2018-2020 Wellcome Trust Hub, in collaboration with Heart n Soul, RCA Helen Hamlyn Centre and UCL CRAE, and Principal Investigator for the Institute of Coding's £1.4 million Future Projects Fund Project, "Creative Solutions to Digital Transformation", in collaboration with FutureLearn, Lancaster University, Goldsmiths College, and Nesta.

Dr. Mattia Savardi, *Research Fellow and Associate Lecturer, Department of Medical and Surgical Specialties, Radiological Sciences, and Public Health, University of Brescia.* Dr. Mattia Savardi received his M.Sc. in Communication Technologies and Multimedia (cum laude) and obtained his Ph.D. with merit in Technology for Health at UNIBS, focusing on Deep Learning for Medical Image Analysis. Awarded the GTTI PhD prize in 2020 for the best thesis, he has worked with brain functional MRI, CXR, hyperspectral, and RGB biomedical images in collaboration with international institutions. His research spans media psychology—analyzing formal cinematic features that elicit measurable effects on viewers—and neuroscience, where he explored brain decoding through fMRI to identify film features perceived during viewing sessions.

Prof. Tim J. Smith, *Professor in Cognitive Data Science, Creative Computing Institute, University of the Arts London, UK.* Prof. Tim Smith earned his Join Honors BSc from the University of Edinburgh in Artificial Intelligence and Psychology. During his PhD, also at Edinburgh Informatics he developed an Attentional Theory of Cinematic Continuity which is widely influential across cognitive psychology, vision science, computational modeling and filmmaking education and practice. He is head of the Cognition in Naturalistic Environments (CINE) Lab, at the Creative Computing Institute, University of the Arts London. Researchers in his lab apply empirical Cognitive, Developmental Psychology, Neuroscientific and Computational methods to questions of Media Cognition and has published widely on the subject both in Psychology and Media journals. His research has informed media practices through collaborations with Dreamworks Animation, BBC, Channel 4, and the Academy of Motion Picture Arts and Sciences.

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