Exploring the Role of AI in Transforming Film Studies through Digital Methods

This panel explores the intersection and integration of artificial ‘intelligence’ (AI) and digital methods, emphasizing their connection to emergent media and methods. As the media landscape evolves, there is a perceived emergency and urgency of incorporating AI-technologies into the film studies analysis of audiovisual culture. The panel critically examines the challenges and opportunities, considering financial constraints, ethical implications, praxeological questions, and the potential impact on scholarly creativity. It addresses the urgent necessity of navigating this technological frontier while adhering to FAIR (Findable, Accessible, Interoperable, and Reusable) and CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) principles. These examinations are crucial for questions about the ethical use of AI and for fostering a creative environment that respects both the technological advancements and the intrinsic human aspects of filmmaking and analysis. The panel contributes to the emergent discourse on the role of AI in film studies, emphasizing the imperative of aligning technological progress with shared ethical principles that prioritize collective benefit and responsible practices.
These aspects cannot be discussed generally but rather require examination based on specific applications and within particular contexts. Against this backdrop, the panel will explore a variety of approaches and applications of AI in digital methods for research and teaching in film studies. We will critically address the novelty of text-to-image generators and seek precedents in other technologies. The spectrum further encompasses engaging with generative AI and LLMs through ChatGPT to seek assistance in visualizing data, examining the advantages and disadvantages of employing computer vision to analyze depictions of nudity in Dutch films, and comparing manual and automated approaches to computer-assisted film analysis.

Keywords: Digital Film Studies, AI, Algorithms, Computer Vision, ChatGPT, Data Visualizations, Computer-assisted Film Analysis, Video Annotation, Deep Learning

Bibliography:

Crawford, Kate. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. New Haven: Yale University Press, 2021.

Es, Karin, und Nanna Verhoeff, eds. *Situating Data: Inquiries in Algorithmic Culture*. Amsterdam: Amsterdam University Press, 2023. https://doi.org/10.1515/9789048555444.

Sudmann, Andreas, Anna Echterhölter, Markus Ramsauer, Fabian Retkowski, Jens Schröter, and Alexander Waibel, eds. *Beyond Quantity: Research with Subsymbolic AI*. KI-Kritik, Volume 6. Bielefeld: transcript, 2023.

Zylinska, Joanna. The Perception Machine: Our Photographic Future between the Eye and AI. MIT Press, 2023.

Chair: Thomas Scherer

Bio: Thomas Scherer is research assistant at “Cinepoetics – Center for advanced film studies“ at Freie Universität Berlin. 2017 – 2021 he was a member of the junior research group “Audio-Visual Rhetorics of Affect“ where he codeveloped digital methods and tools for film studies. Recently, his dissertation on the aesthetics and poetics of contemporary propaganda was published.

Paper 1: Opening the Black Box of AI

Malte Hagener

The claims of artificial intelligence are claims of absolute novelty and radical disruption. The large-language models such as Chat GPT and Google’s Bard, the text-to-image-generators such as Dall-E, Midjourney and Stable Diffusion and many applications in the field of Natural Language Processing (NLP) are being hailed as breakthroughs that propel whole fields (such as education or image production) into states of emergency. Contrary to these claims, I want to stress that the technologies on which most of these programmes rely are in fact based on gradual progressions from earlier technologies that are known and established.

Even though the majority of the algorithms that govern the functioning of the applications and data sets used for training are unknown (Stable Diffusion is the exception to this rule), it is still possible to gain some understanding of how these applications operate. My contribution wants to examine the functioning of machine learning especially in the field of moving images, both in an analytical and in a generative way (which, for computers, is not that much of a difference anyway). By looking at some recent forays, I want to explore how some researchers have used these novel technologies. If we turn to these machine learning tools (and the easy and widespread availability will reinforce that movement), the double question we have to deal with now is if we are able to understand at least partly how these models come to the results they present us with and how we can use the particular applications that become available. Without an affirmative answer to the first question, the second one remains highly problematic.

Keywords: Digital Film Studies, AI, Algorithms, Computer Vision, Deep Learning, Image Generators

Bibliography:

Crawford, Kate. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. New Haven: Yale University Press, 2021.

Oiva, Mila; et al.: “Soviet View of the World. Exploring the Visual Contents of ‘Novosti Dnia’ Newsreel Journal (1945-1992)”. In: *Journal of Cultural Analytics*, special issue: Digital Film Historiography: Challenges of/and Interdisciplinarity (edited by Malte Hagener and Diana Roig Sanz), Spring 2024 (forthcoming).

Somaini, Antonio: *Algorithmic Images. AI and Visual Culture*. Amsterdam: Amsterdam University Press 2024 (forthcoming).

Bio: Malte Hagener is Professor in Media and Film Studies at Marburg University. After studying in Hamburg and Norwich he received his PhD in Amsterdam (*Moving Forward, Looking Back. The European Avant-garde and the Invention of Film Culture, 1919-1939*, AUP 2007). Director of „media/rep/ – Open Access-repository for media studies”, principal

investigator of the graduate training group „Configurations of film“, co-speaker of the consortium „NFDI4Culture“, speaker of the “Hermes” centre for the implementation of digital methods, co-speaker of the “Digital Cinema-Hub” project for digital film studies. Awarded with the Swedish-German Research Award 2016 by Riksbanken Jubileumsfond and Alexander-von-Humboldt-Stiftung (2016/17 in Karlstad). Co-author (with Thomas Elsaesser) of *Film Theory. An Introduction through the Senses* (Routledge 2010/2015), also published in eleven translations. (Co-)Editor of *How Film Histories Were Made.* AUP 2024 (with Yvonne Zimmermann), *Handbuch Filmanalyse* (Springer 2020; with Volker Pantenburg), *The Emergence of Film Culture.* Berghahn 2014. (Limina price 2014).

Paper 2: Identifying Nudity in National Cinemas: Potentials and Pitfalls of Computer Vision

Isadora Campregher Paiva

Recent advancements in emerging computer vision technology have piqued the interest of film scholars in assessing its capabilities to address film inquiries. Growing AI hype lends the matter some urgency, since such models are often implemented without much question as to whether or not they are suitable for the task. One common refrain of the defenders of digital humanities is that automated methods can be used to (dis)prove hypotheses. As a case study, we test whether Dutch cinema’s reputation for containing rampant displays of nudity and sex (Verstraten, 2016) is warranted. How much explicit nudity actually occurs in Dutch films? How does that compare to films from other countries, and how did this develop over time? We take as our corpus films shown to Amsterdam audiences in the sample years of 1942, 1952, 1962, 1972 and 1982, comparing the Dutch movies to those from the US (known for their relative lack of nudity), and those of Denmark and Sweden, which have a similar reputation to be nudity-prone (Stevenson, 2010). Our results indicate that open models accessible to researchers are still unsuitable for fine-grained analysis, particularly when applied to corpora that are unlikely to be part of the training data and regarding something as subjective as nudity. Nevertheless, we found the process of engaging with such models worthwhile for providing rough evidence of trends and forcing us to face just how subjective nudity is, since we had relatively high inter-coder disagreement. Ultimately, our study underscores the necessity of reflexive and critical scholarship that is interdisciplinary and blends digital methods with humanistic interpretation. Amidst AI hype, it's crucial to recognize the complexities inherent in historical analysis and engage in nuanced discussions about the role of technology in shaping our understanding of cultural phenomena.

Bibliography:

Akyon, Fatih Cagatay, and Alptekin Temizel. 2023. “State-of-the-Art in Nudity Classification: A Comparative Analysis.” In *2023 IEEE International Conference on Acoustics, Speech, and Signal Processing Workshops (ICASSPW)*, 1–5.

Burghardt, Manuel, Adelheid Heftberger, Johannes Pause, Niels-Oliver Walkowski, and Matthias Zeppelzauer. “Film and Video Analysis in the Digital Humanities – An Interdisciplinary Dialog.” Digital Humanities Quarterly 014, no. 4 (December 20, 2020).

Stevenson, Jack. 2010. *Scandinavian Blue: The Erotic Cinema of Sweden and Denmark in the 1960s and 1970s*. Jefferson, N.C: Mcfarland & Co Inc.

Verstraten, Peter. 2016. *Humour and Irony in Dutch Post-War Fiction Film*. Amsterdam: Amsterdam University Press.

Keywords:
Digital Film Studies; Computer Vision; AI; Machine Learning; Nudity; Film History: Mixed Methods.

Bio: Isadora Campregher Paiva is a lecturer in Film Studies at the University of Amsterdam and a research associate in the project Social Sciences & Humanities Open Cloud (SSHOC-NL). She has a Master's in Sociology from the Universidade Federal do Rio Grande do Sul (UFRGS) and an MA in Audiovisual and Cinema Studies from the Goethe University Frankfurt, where she also worked as a lecturer and a research associate on the project "Digital Cinema-Hub" (2021-2023). This paper is the result of work undertaken in the CREATE Lab at the University of Amsterdam, and is a group effort, with the co-authorship of Carlo Bretti, Inês Teixeira, Ivan Kisjes, Pablo Suarez, Houda Lamqaddam, Christian Olesen, Nanne van Noord, and Julia Noordegraaf.

Paper 3: Do you see what (A)I see(s)? Comparing Manual and Automated Practices in Computer-Assisted Film Analysis

Josephine Diecke

In recent years, a notable surge in tools and methods for both manual and (semi)automatic analysis of audiovisual media has been observed (Arnold & Tilton 2023; Burghardt et al. 2020; Heftberger 2018; Sittel 2017). Existing platforms such as ELAN and VIAN primarily focus on time-consuming manual annotations for content analysis and require specific hardware. Allegedly to streamline this process, computer science methods, particularly pattern recognition, are advocated for efficient and (semi)automatic evaluation across various modalities, highlighting the emergency for fast advancements. However, the rapid progress in AI and machine learning poses a challenge, demanding a high level of technical expertise and computational resources for implementation. The web-based platform TIB AV-Analytics (TIB-AV-A) stands as one of the latest offerings, utilizing modern web technologies to furnish users with a responsive and interactive interface, facilitating manual annotations and granting access to deep learning methods without necessitating advanced technical knowledge or specific hardware.

Amidst this evolving landscape of tools and methods, crucial questions from a film studies perspective persist: What do we need? How many of our analysis steps could or should be manual or automated? Can this be achieved by a one-size-fits-all solution? This paper critically examines the methods and tools used for video annotation in film studies research and teaching, emphasizing the convergence of traditional approaches and cutting-edge technologies. Drawing from user feedback on the TIB-AV-A platform and contrasting it with VIAN, the presentation seeks to provide a comparative analysis. The central inquiry revolves around identifying essentials for effective teaching and studying of audiovisual media in film studies, exploring the delicate balance between manual and automated approaches.

Keywords: Digital Film Studies, AI, Algorithms, Deep Learning, Computer Vision, Annotation, Film Analysis, Computer-Assisted Analysis, VIAN, TIB AV-Analytics

Bibliography:

Arnold, Taylor, and Lauren Tilton. Distant Viewing: Computational Exploration of Digital Images. Cambridge, Massachusetts: The MIT Press, 2023.

Burghardt, Manuel, Adelheid Heftberger, Johannes Pause, Niels-Oliver Walkowski, and Matthias Zeppelzauer. “Film and Video Analysis in the Digital Humanities – An Interdisciplinary Dialog.” Digital Humanities Quarterly 014, no. 4 (December 20, 2020).

Flueckiger, Barbara, and Gaudenz Halter. “Methods and Advanced Tools for the Analysis of Film Colors in Digital Humanities.” Digital Humanities Quarterly 14,4, no. Special Issue Digital Humanities&Film Studies. Analyzing the Modalities of Moving Images (2020). https://doi.org/10.5167/uzh-197994.

Heftberger, Adelheid. Digital Humanities and Film Studies. Visualising Dziga Vertov’s Work. Quantitative Methods in the Humanities and Social Sciences. Berlin: Springer International Publishing, 2018.

Sittel, Julian. “Digital Humanities in der Filmwissenschaft.” MEDIENwissenschaft: Rezensionen | Reviews 34, no. 4 (2017): 472–89. https://doi.org/10.17192/ep2017.4.7636.

Springstein, Matthias, Markos Stamatakis, Margret Plank, Julian Sittel, Roman Mauer, Oksana Bulgakowa, Ralph Ewerth, and Eric Müller-Budack. “TIB AV-Analytics: A Web-Based Platform for Scholarly Video Analysis and Film Studies.” In Proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval, 3195–99. Taipei Taiwan: ACM, 2023. https://doi.org/10.1145/3539618.3591820.

Bio: Josephine Diecke is Assistant Professor of Film Studies at the University of Zurich. She has conducted extensive research on the history of film color technologies, moving image preservation and digital methods for computer-assisted text and video analysis. Her expertise stems from her work as a research associate on the "Filmcolors" project (University of Zurich), as the academic coordinator of the "Digital Cinema-Hub" project (Philipps-Universität Marburg), and as a film lab technician for various service providers. She holds a Ph.D. from the University of Zurich with a thesis on the color film processes Agfacolor and Orwocolor, and is co-editor of the *Open Media Studies Blog*.