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Computer Generation of Filmic Discourse from a Cognitive/Affective Perspective

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Abstract

In this position paper, we argue that advances in intelligent cinematography require better models of the multimodal structure of filmic discourse, and of the inferences made by an audience while films are being watched. Such questions have been addressed by film scholars and cognitive scientists in the past, but their models have not so far had sufficient impact on the intelligent cinematography community. In the future, this community should become more interested in understanding how cinematography and editing affect the movie in the audience's mind. At the same time, such frameworks can help researchers in computer graphics use computer simulations to build experiments in film cognition and test hypotheses in film theory.

Film theory and practice has gathered an immense storehouse of practical knowledge concerning how audiovisual sequences can be used to communicate effectively. That knowledge is typically passed on during study and continuously refined as applied in production. It is still a significant challenge, however, to make even the most basic of such knowledge accessible to the tools available for the creative designer. This is largely because there has been an impasse concerning just how such knowledge might be formalised. This impasse has several negative consequences: including both lack of communicability and a deficit of solid cognitive evaluations of their effectiveness and the perceptual boundary conditions that must hold for effectiveness to be guaranteed.

Recent work on modelling filmic discourse suggests that we can draw striking parallels between many filmic techniques and 'constructions' as developed in several recent and increasingly accepted linguistic theories, particularly so-called 'construction grammar'. Constructions combine configurations of technical features with their intended communicative effects, thereby changing perspective from abstract rules and syntax to empirically observable patterns derived from corpus analysis of real language use.

By drawing on our own new results on deep analogies between filmic discourse and verbal discourse we offer for the first time a practice- and experience-driven characterisation of filmic constructions extending beyond previous notions of 'filmic idioms' and offering an appropriate high-level interface interaction between designers and creative tools - that is, rather than working with lower level details of camera positions, angles and so on, the designer or film student can move directly to their intended effects, exploring possibilities and alternatives more effectively.

The work involved in providing such a high-level interface involves: corpus-based analysis of filmic discourse patterns and constructions as evidenced from successful examples of film, analysis of the cognitive/affective mechanisms contributing to these constructions and the determination of boundary conditions for their application and combination, integration of the discourse constructions and construction combinations specifications and required perceptual targets within an implementable viewer model. As a case in point, this approach promises to offer high-level control of cinematography and editing during movie preproduction, where filmmakers could use such filmic discourse constructions and immediately test their effectiveness by watching computer-generated previzualizations in real-time. To reach this goal, filmic discourse constructions should be represented in a language that can be understood by filmmakers and computers and used as an intermediate representation between the desired filmic discourse structure and the corresponding camera positions, movements and editing. Such an approach is likely to shed light both on how filmic discourse is created by cinematographers and film editors and on how it can be reproduced by computers.

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