

Quest for Insight: Contextual and Popularity Factors in Movie Memorability Prediction

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Abstract

While the influence of visual factors on movie memorability has been extensively studied, the roles of film recognizability, genre, and popularity remain underexplored. In this Quest for Insight paper, we investigate these factors using the additional metadata provided in this edition of the MediaEval Memorability Task. We use the “neutral” and “typical” labels as indicators of whether a film can be recognized from a given clip. To approximate film popularity, we leverage user ratings from the MovieLens dataset, while genre-level analyses are conducted using the provided genre annotations. Our analysis reveals the differences between the memorability distributions of neutral and typical clips, suggesting that recognizability plays an important role in memorability prediction. In contrast, we find little to no correlation between film popularity and clip memorability. Similarly, memorability scores exhibit only limited variation across film genres. These findings suggest that neither popularity nor genre substantially influences movie-clip memorability, whereas the extent to which a film is recognizable from a clip may be a key factor in understanding what makes content memorable.

1. Introduction

The question of what makes some films more memorable than others is multifaceted, as movies are both visually engaging and culturally pervasive. The factors that make a movie clip memorable may extend beyond its visual appearance to include its narrative relevance and the popularity of its source film. However, the relationship between these factors and video memorability remains underexplored in the literature. MediaEval2026’s Movie Memorability task [1] provides an opportunity to investigate these relationships using the MovieMem dataset [2]. In addition to movie clips and their corresponding memorability scores, this edition includes metadata that can be used to assess a clip’s relevance to the source film, the popularity of the film itself, and the genres to which it belongs.

In particular, this edition provides: “neutral” and “typical” labels, which indicate if a source film can be readily identified from a given clip. Additionally, participants are provided with a subset of the MovieLens dataset [3], containing user ratings, genre annotations, and user-generated tags for each film. We use these annotations as proxies for film popularity and contextual information. Using these metadata sources, we investigate the following research

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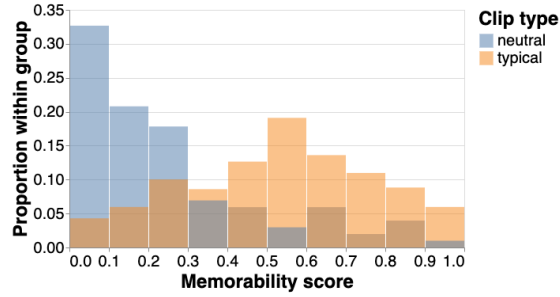


Figure 1: Distribution of memorability scores for neutral and typical clips in the MovieMem development set. Neutral clips exhibit a pronounced skew toward lower memorability values compared with typical clips.

questions:

- (1) What differences exist between neutral and typical clips in terms of their memorability score distributions and their per-film statistics?
- (2) What is the relationship between the user ratings provided in the MovieLens dataset and the memorability scores provided in the MovieMem dataset?
- (3) To what extent do memorability scores differ across film genres?

We address these questions using a descriptive statistical analysis and derive the following insights: (1) whether neutral and typical videos should be treated as different tasks, considering the differences in distributions, (2) whether confounding factors such as film popularity and audience reception influence the memorability of individual clips, and (3) whether certain film genres tend to contain more memorable scenes than others. These insights can benefit down-stream applications of movie-memorability such as trailer editing and content selection. In particular, they can help identify recognizable and memorable scenes within specific genres while accounting for external factors that may influence memorability beyond the visual content of the clip itself.

2. Materials and Methods

As noted in Section 1, we are provided with two sources of annotations. The first is the MovieMem [2] dataset, comprising of per clip “memorability scores”, the number of annotators and 0/1 neutral/typical labels (refer to Cohendet et al.’s [2] work for details of the annotation process). The second source is a subset of the MovieLens dataset [3], which includes user ratings, genre annotations, and user-generated tags associated with each film. We organize our statistical analysis of these annotations as follows. Section 3.1 examines the distributional differences between neutral and typical clips. Section 3.2 analyzes the relationship between MovieLens user ratings and MovieMem memorability scores. Section 3.3 investigates genre-level differences in memorability. Finally, Section 4 summarizes the key findings and discusses their implications.

3. Statistical Analysis

3.1. Neutral and Typical Scores

Cohendet et al. [2] demonstrated that typical videos have higher mean memorability scores compared to neutral ones (0.53 and 0.24, respectively). However, the extent to which the memorability score distributions differ between neutral and typical clips, as well as the distribution of

these clip types across films, remains largely unexplored. We extend their analysis in two ways. First, we examine the memorability score distributions of neutral and typical clips. As shown in Figure 1, the two categories exhibit markedly different distributions. Neutral clips are heavily skewed toward lower memorability scores (skewness: 1.25), whereas the distribution of typical clips is approximately symmetric (skewness: -0.08). Furthermore, a linear regression analysis yielded a coefficient of -0.28 and an $R^2 = 0.18$, implying a moderate association between clip type and memorability score. Second, we investigate the distribution of neutral and typical clips across films. The results reveal a substantial imbalance between the two categories. Of the 78 films in the dataset, 30 contain no neutral clips, while one film contains only a single neutral clip. On average, each film contains 5.44 typical clips and 2.10 neutral clips. Because dataset splits are commonly generated at the film level rather than the clip level, this imbalance may significantly affect model development, selection, and evaluation. Overall, these findings suggest that neutral and typical clips may rely on different factors for memorability, motivating their treatment as distinct prediction tasks. While neutral clips may depend primarily on visual characteristics, typical clips may benefit from contextual cues that help identify the source film. Determining which contextual factors contribute most strongly to memorability remains an open research question.

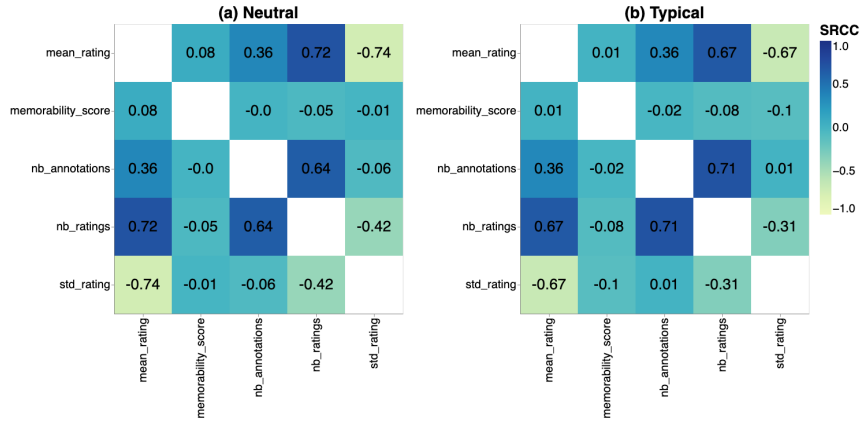


Figure 2: An examination of the correlations between the meta-data ratings in the MovieLens dataset and the memorability scores in the MovieMem dataset, separated by neutral and typical videos.

3.2. Correlation with MovieLens ratings

This section examines the relationship between MovieLens ratings and MovieMem memorability scores. We use MovieLens ratings as a proxy for film popularity and report Spearman rank correlation coefficients (SRCC) between MovieLens statistics (number of ratings, mean rating, and rating standard deviation) and MovieMem variables (number of annotators and memorability scores). Unless otherwise stated, all reported correlations are statistically significant ($p < 0.05$). We first examine the relationship between MovieLens ratings and annotation statistics. We observe strong positive correlations between the mean user rating and the number of ratings, as well as between the number of ratings and the number of memorability annotators (SRCC = 0.72 and 0.64, respectively). These results suggest that films receiving more ratings tend to be rated more highly and are associated with a larger number of memorability annotations. Furthermore, we observe negative correlations between the standard deviation of ratings and both the mean rating and the number of ratings (SRCC = -0.72 and -0.42 , respectively). This indicates that films with a larger number of ratings are highly rated and have greater agreement,

suggesting a stronger consensus in audience reception.

Next, we examine the relationship between MovieLens derived variables and MovieMem memorability scores. Since these variables are defined at the film level, all clips from the same film share identical values. We perform the analysis separately for neutral and typical clips. As shown in Figure 2, the MovieLens variables exhibit little to no correlation with clip memorability. Although film popularity and audience reception appear to influence the number of annotations collected during dataset construction, they provide limited predictive value for memorability. These findings suggest that memorability is largely independent of a film’s overall popularity and audience ratings.

3.3. Genre and Movie Memorability

This section examines genre-level differences in memorability, across neutral and typical clips. We compute the average memorability score for each genre, assigning clips to all genres associated with their source film in the MovieLens dataset. Our analysis, summarized for the eight most frequent genres in Table 1, reveals only limited differences in memorability across genres. Although certain genres exhibit higher average memorability scores than the overall category means, these observations should be interpreted with caution because they are based on relatively few samples. For example, Children’s films exhibit higher memorability among typical clips (0.60 vs. 0.53), while Romance films exhibit higher memorability among neutral clips (0.56 vs. 0.24). Overall, the results provide limited evidence that genre is a major determinant of movie-clip memorability.

Typical				Neutral			
Genre	Count	Mean	Variance	Genre	Count	Mean	Variance
Children	7	0.60	0.01	Romance	5	0.56	0.03
Sci-Fi	116	0.55	0.05	Adventure	24	0.35	0.08
Crime	93	0.54	0.06	War	6	0.31	0.03
Drama	229	0.53	0.05	Drama	57	0.28	0.08
Adventure	131	0.52	0.05	Sci-Fi	30	0.25	0.07
Romance	23	0.52	0.06	Thriller	54	0.20	0.04
Thriller	151	0.51	0.06	Comedy	19	0.20	0.03

Table 1

Summary statistics for each genre, including the number of clips and the mean and variance of their memorability scores.

4. Discussion and Outlook

Our statistical investigation reveals two key points regarding movie memorability: (1) Popularity of the films influence the number of annotators in the memorability annotation process, yet exhibits little to no relationship with the memorability of individual clips and (2) Neutral and typical video distributions are vastly different, suggesting that they may benefit from distinct modeling strategies. A limitation of our study is the exclusion of popularity ratings from proprietary platforms such as IMDb, which may provide a direct view of the relationship between popularity and memorability. The substantial differences between neutral and typical clips suggest that future work should explore task-specific modeling approaches for each category. Furthermore, a better understanding of the factors that make a clip “typical”, such as narrative relevance, plot importance, or iconic characters, may provide valuable insights into movie memorability.

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Declaration on Generative AI

During the preparation of this work, the authors used ChatGPT in order to: Improve writing style, Grammar and spelling check. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the publication’s content.

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