

Similarities and Divergences in Electronic Game Review Texts

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Abstract—With the intensification of the electronic gaming industry and electronic gaming competitions, the repercussions of reviews involving games have become more common. Like a movie, an electronic game can be criticized for its features, including gameplay, story, audio, visuals, and multiplayer (if any). Because there are reviews written by specialists (critics) and ordinary users, there may be divergences and similarities between the reviews made by both audiences. Commonly, when The Game Awards (TGA) score comes out, players open forums and discuss their reviews about the games, their features, and if the prize should have been for the winner. This paper verifies the similarities and divergences of electronic game reviews between critics and ordinary users using text processing and information retrieval techniques. We collected reviews about eight games from the Metacritic website; four games played for TGA’s best game of the Year Award. Our results indicated that the story element is the most commented by both types of users and that ordinary users tend to use gameplay and graphics when referring to the gameplay and visual elements, respectively. Critics and ordinary users do not often comment on the audio and multiplayer aspects. By using these results, game software engineers can consider new gameplay patterns and story or player modeling.

Index Terms—Game Review, Natural Language Processing, Information Retrieval, Metacritic, Game Software Engineering

I. INTRODUCTION

Electronic games are currently one of Brazil’s first leisure and worldwide [1], [2]. Software engineers develop this kind of computational system using sophisticated technology and considering experience and analytic data. This complex system consists of interactions between hardware and software, which manipulate sounds, images, and actions. Early electronic games had simple visual, and in some cases, the game had no audio design direction. Nowadays, personal computers such as consoles (gaming-specific computers), mobile phones, tablets, smartphones, notebooks, and modern devices (tactile, haptic) motivate the playing of electronic games with new advanced features.

With the strengthening of the electronic gaming industry and electronic gaming competitions, the repercussions of reviews involving games have become more common. As a movie, features of electronic games, including gameplay, story, audio, visuals, and multiplayer, are used to review games. The gameplay is the way the player can interact in the environment. This feature differentiates an electronic game from a book or

movie, as it allows the player to change the factors of the player’s context [3]. The story takes into consideration the quality of the narrative of the game. The audio features are related to the game’s soundtrack as well as its audio design. Visuals refer to the quality of the physical details present in the game environment, such as characters, animals, cars, nature elements, and others. Finally, the multiplayer element concerns the quality of multiplayer matches [4]. These characteristics are the basis in the analysis of games in review texts. These game features are evaluated at the *The Game Awards* (TGA) event.

Like the existing annual awards for movies, the TGA is a yearly video game award. In these awards, the current year’s nominated games compete for the best game by categories such as narrative, soundtrack, audio design, art direction, multiplayer, best game of the year, and more [4], [5]. However, in addition to these annual awards, entertainment websites annually publish game reviews to respond to a particular game’s interested public. These sites include Metacritic (<https://www.metacritic.com>), an American site that publishes snippets of reviews by critics and regular users (who may be gamers). Critics review electronic games and provide ratings from 0 to 100, and ordinary users assign ratings from 0 to 10 [6]. The grades refer to the user’s review regarding the game’s quality about its characteristics, such as gameplay, story, visual elements, and others. For critics, negative grades are from 0 to 45, mixed from 46 to 75, and positive from 76 to 100. Meanwhile, ordinary users have negative from 0 to 4, neutral from 5 to 7, and positive from 8 to 10.

Since there are reviews made by critics and ordinary users, there may be divergences and similarities between the reviews made by both audiences. Commonly, when the TGA score comes out, players open forums to discuss questions about the prize for the winning game [5], [7], [8]. The reviews’ analysis makes it possible to verify the characteristics of a game more praised and criticized by the users. Furthermore, it is possible to analyze the similarity and dissimilarity between each type of user’s reviews.

This paper aims to verify the similarities and divergences in the reviews of electronic games between critics and ordinary users. This analysis would be useful for the community of game players and developers to know the user’s and critic’s

ideas and thought about the game, the game’s qualities, and so on. Moreover, game software engineers can consider new gameplay patterns and story or player modeling.

To reach our goal, we collected reviews about eight games. We used text processing and information retrieval techniques to automate the process of knowledge discovery to answer the following Research Question (RQ):

- (RQ1) Are there divergence (or similarity) in the reviews between critics and ordinary users (players or others) for each game by considering gameplay, audios, visuals, multiplayer, and story?
- (RQ2) What characteristics (gameplay, audios, visuals, multiplayer, and story) of the electronic games that ordinary users rate?
- (RQ3) What characteristics (gameplay, audios, visuals, multiplayer, and story) of electronic games that critics rate?
- (RQ4) Considering the games nominated to compete for the best game of the year award at TGA, does one have the best result for the gameplay, audio, visual, multiplayer, and story features?

We extracted 7282 reviews from the Metacritic¹ and created a repository to support a knowledge discovery process. For that, we exploited the SpaCy library [10] and the NLTK development platform [9] for working the reviews by considering lexical tools, word processing libraries, tokenization, stemming, marking, and morphosyntactic analysis. Moreover, we used the VADER tool [11] for sentiment analysis.

We captured the reviews of eight electronic games, Red Dead Redemption 2 (RDR2), God of War (GOW), Overwatch (OW), Uncharted 4 (U4), Left Alive (LA), Jump Force (JF), Anthem, and Rage 2. We chose the four games nominated for the best game of the year by TGA: RDR2 and GOW in 2018, and Overwatch and Uncharted 4 in 2016; and four games that feature an average of grades, which are in the neutral or negative category: Left Alive, Jump Force, Anthem and Rage 2. We extracted user reviews from the launch of each game until the year 2019.

The remaining section of this paper is organized as follows: Section 2 presents the created method to compose the information source of reviews to be manipulated and retrieved to answering RQ1, RQ2, RQ3 e RQ4; Section 3 details the results obtained by using the created method to analyze similarities and divergence in electronic game review texts. Finally, Section 4 comments final remarks, limitations, and future works.

II. METHOD

Our analysis’s first step to answering the Research Questions (RQ) created the data repository for knowledge extraction. For this, the Metacritic website was our data source. The manual analysis of this repository was an unfeasible task, due to the number of reviews existing on the site, the games commonly have over one hundred reviews.

¹<https://www.metacritic.com/>

In this context, we developed a Python web crawler to capture reviews of the eight chosen games: GOW, RDR2, Uncharted 4, Overwatch, Rage 2, Anthem, Left Alive e Jump Force. The web crawler captured reviews from regular users and critics by changing the page link. For example, the critics’ review pages and the user reviews pages were in the following format:

<https://www.metacritic.com/game/playstation-4/red-dead-redemption-2/critic-reviews> and <https://www.metacritic.com/game/playstation-4/red-dead-redemption-2/user-reviews>, respectively. This format was the same for the other games, changing just the game’s name; the example shown is from RDR2. We used only reviews of Playstation 4 game versions because some games only play on the Playstation 4 console, such as GOW and Uncharted 4.

The captured reviews passed through a filter that excluded reviews not written in English or with no grade. The English language is prevalent in the Metacritic website reviews. We manipulated just reviews in English. We created two TXT files for each game, one for storing reviews from ordinary users and another for critics.

We extracted 7282 reviews from all games, divided into eight files of critic’s reviews and eight files of ordinary user’s reviews in a total of 16 files. After we separated the reviews into positive, mixed (or neutral) or negative by considering the grade given by the type of user. The number of reviews and the categories of evaluations for each game are in Table I.

TABLE I
TOTAL OF USER REVIEWS FOR EACH GAME.

Game	Critics			Ordinary Users		
	Pos	Mix	Neg	Pos	Mix	Neg
RDR2	96	2	0	1402	288	318
GOW	117	1	0	2202	103	102
Uncharted 4	110	2	1	1362	143	63
Overwatch	31	0	0	143	65	85
Rage 2	10	31	2	50	13	34
Anthem	0	22	6	94	13	166
Left Alive	1	9	29	31	9	22
Jump Force	0	55	9	10	5	25
Total	534			6748		

The next step was the analysis of the texts extracted from the reviews. The essential aspects of reviews are the adjective because they qualify a noun describing opinions. Therefore, we applied a morphological analysis of the text to obtain the nouns terms and their respective qualifiers, if there are. We used the NLTK and the spaCy libraries to perform natural language processing and the text’s morphological analysis.

We exploited the morphological analysis as a tree to identify the adjectives (with the labels: JJ, JJR, or JJS) and nouns (with the labels: NN, NNP, NNPS, or NNS), as presented in Fig. 1. Verbs are labeled as VB, and others (preposition, adverbs, etc.) have specific labels. After, we calculated each noun’s frequency to verify if it fits in one of the characteristics evaluated in the electronic games: gameplay, story, audios, visuals, and multiplayer. We intended to check if the critics and users directly evaluated the features in the analysis. By considering the frequency of a characteristic in all game

reviews written by critics or regular users, we answered the RQ2 and RQ3.

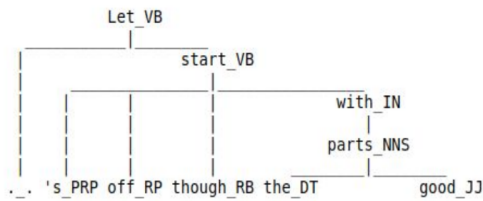


Fig. 1. Structure of the morphological analysis.

A sentiment analysis about the relation between adjective and noun also supported the answering RQ1 and RQ4, coupled with the frequency of characteristics in positive, mixed, and negative reviews. We considered the user types of grades to know the class (positive, mixed, and negative). There was no manual intervention in the analysis by feelings.

For answering RQ1 and RQ4, we carried out two analyses: (i) the first based on frequency by category and (ii) the other based on frequency by feeling, using the VADER tool². In both approaches, we compared the ordinary users' reviews with the critics' reviews. First, we balanced the number of reviews analyzed from each type of user (lines 1-6 in Algorithm 1). For example, the RDR2 game had 98 critics' reviews and 2008 ordinary users' reviews, so we created groups with ordinary users' reviews with 98 reviews for this game. Besides, we balanced the number of existing categories; for example, the RDR2 game had 1402 positive, 288 mixed, and 318 negative reviews, among all ordinary users' reviews. In this sense, when creating a 98 reviews group, the same percentage of each category was placed: 70% of positive reviews, 14% of mixed reviews, and 16% of negative reviews. We created the maximum number of groups following the balanced strategies. In the end, we calculated the average of the absolute frequency of a noun qualified as positive, mixed, or negative (lines 30-36 in Algorithm 1). The objective of carrying out the balancing was so that there was an analysis with groups of the same size so that it was possible to evaluate with the same proportions.

After creating the groups by frequency of categories, we considered the adjective nouns in the same way we answered RQ2 and RQ3. Thus, we counted the rate of positive, neutral, and negative adjectives qualifying story, gameplay, visuals, audios, and multiplayer categories (lines 7-29 in Algorithm 1). Again in the example of RDR2, 19 groups were created with 98 reviews from ordinary users. We verified how often elements were qualified with positive, neutral, and negative comments for each group. It was possible to calculate the

²Valence Aware Dictionary for Sentiment Reasoning (VADER) is a feeling analysis tool based on the lexicon and rules tuned to feelings expressed on social media. Eleven typical references of applicable states, such as LIWC, ANEW, the General Inquirer, SentiWordNet, are used to compare VADER's effectiveness. Using qualitative and quantitative methods, VADER's authors empirically constructed and validated a list of lexical resources. VADER is an open-source tool, available on GitHub, under license from the Massachusetts Institute of Technology (MIT) [11].

average with which elements were qualified for each category. In the case of critical analysis, for the RDR2 game, they were a unique group.

Algorithm 1 Algorithm for analysing reviews' critic and user

```

Require: reviews_critics, reviews_users
1: if reviews_critics > reviews_users then
2:   reviews_critics ← balance_reviews(reviews_critics)
3: end if
4: if reviews_critics < reviews_users then
5:   reviews_users ← balance_reviews(reviews_users)
6: end if
   /*The algorithm shows groups of critical reviews, but the
   process is the same for ordinary user reviews*/
7: while i < sizeof(reviews_critics) do
8:   group_reviews ← reviews_critics[i]
9:   while j < sizeof(group_reviews) do
10:    review ← group_reviews[j]
11:    while review has noun do
12:      n ← noun
13:      while n has adjective do
14:        qtd_noun_adjectives[n]['Qtd']++
15:        if adjective is Positive then
16:          qtd_noun_adjectives[n]['Positive']++
17:        end if
18:        if adjective is Mixed then
19:          qtd_noun_adjectives[n]['Mixed']++
20:        end if
21:        if adjective is Negative then
22:          qtd_noun_adjectives[n]['Negative']++
23:        end if
24:      end while
25:    end while
26:    j++
27:  end while
28:  i++
29: end while
30: while i < sizeof(qtd_noun_adjectives) do
31:   values = qtd_noun_adjectives[i]['noun']
32:   ave_pos['noun'] = average(values['Positive'])
33:   ave_mix['noun'] = average(values['Mixed'])
34:   ave_neg['noun'] = average(values['Negative'])
35:   i++
36: end while
  
```

The approach using the VADER tool is similar to the frequency by categories. The difference is that frequency is based on the analysis of sentiment expressed in the adjective and noun. For example, the VADER tool analyzed the relationship between the adjective and the noun in the "Great Storys". Considering the result of the analysis, we counted whether it was a positive, neutral, or negative comment, as shown in lines 7 to 29 of Algorithm 1. The proposed approaches intended to answer both RQ1 and RQ4. The only difference in the process of answering RQ4 was that balancing was a game-to-game relationship, and the type of user remained the same (critic

versus critic, and ordinary user versus ordinary user).

III. RESULTS AND DISCUSSION

We carried out each step presented in the previous section to answering the RQs. During the morphological analysis of critics' reviews, we obtained 1958 adjectives, and they were associated with 686 nouns. On the other hand, in ordinary users' reviews, we acquired 21806 adjectives related to 2770 nouns. Thus, the 50 most adjective nouns for each user type are in Table II.

TABLE II
THE MOST QUALIFIED NOUNS IN THE CRITICS' REVIEWS AND ORDINARY USERS' REVIEWS.

User Type	Nouns (Frequency of associated adjectives)
Critics	world(67), games(65), story(40) , adventure(33), experience(33), time(26), characters(25), way(19), mechanics(18) , masterpiece(17), level(17), gameplay(14) , fun(14), combat(13) , amount(13), title(12), God(12), quality(12), series(12), fans(11), score(10), years(10), bar(10), franchise(10), ideas(10), chapter(10), issues(10), generation(9), thing(9), visuals(9) , player(9), system(9), moments(9), work(9), sense(9), cast(8), titles(8), elements(8), achievement(8), conclusion(8), end(8), aspects(7), areas(7), features(7), shooter(7), things(7), entry(6), graphics(6) , package(6)
Common users	games(1844), story(989) , world(736), graphics(569) , time(568), experience(449), gameplay(420) , thing(404), characters(375), things(338), reviews(325), player(295), way(250), series(234), hours(217), masterpiece(216), mechanics(194) , part(190), people(186), system(181), level(171), character(164), score(160), combat(152) , life(152), fun(151), person(142), job(135), God(131), fan(130), Collapse(127), travel(124), play(123), moments(122), redemption(122), mode(121), amount(120), review(119), nothing(118), issues(115), years(113), controls(113) , missions(112), something(110), content(110), times(109), design(109), work(106), notch(103)

By considering Table II, it was possible to answer questions RQ2 and RQ3. The element **story**, the narrative of games, has quite adjective by both types of users. Therefore, we concluded that this element is the most important for both types of users, among the essential characteristics observed. Only the nouns referring to the story, gameplay, visual, audio, and multiplayer were analyzed.

Regarding the visual element usually named as graphics, there was a divergence between the types of users. We did not find many adjectives of **visuals** and **graphics** in the critic's reviews. Unlike critics, ordinary users have quite qualified the **graphics** element. It is the fourth most adjective-noun in their reviews. We concluded that ordinary users consider the visual/graphic elements important, unlike critics.

The gameplay element had four nouns related to this feature in the reviews of electronic games. The nouns were **mechanics**, **combat**, **gameplay** and **controls**. Among the 50 nouns most criticized by critics, there were not only **controls**, but

also **mechanics**, **gameplay** and **combat** were in the noun list, the three were well cited in the critics' reviews. We concluded that critics considered gameplay very important to analyze games. Moreover, this element usually was used together with other words. Not unlike critics, ordinary users also considered this element important in video games. However, unlike critics, ordinary users prefer to use the word **gameplay**. We observed this same fact to the visual elements of games. Ordinary users used the word **graphics** more often than **visuals** (it did not even appear in the top 50 by ordinary users). As a result, it is possible to observe a pattern in the use of words in ordinary users' reviews when referring to visual and gameplay elements in electronic games.

Finally, we did not find the audio and multiplayer elements among the 50 most adjective nouns. Consequently, no analysis is possible from these elements between the users. However, it is possible to observe that the audio and multiplayer features were not so relevant among the critics and ordinary users of the Metacritic website. In general, among the gameplay, visuals, story, audio, and multiplayer elements, three were found in reviews by critics and users. However, audio and multiplayer did not have significant frequencies on reviews.

Table III presents the number of groups formed by balancing critics' reviews with ordinary users' reviews. The second row shows the games, and the third the types of users, critics (C), or ordinary users (UC). The fourth line shows the number of groups created after the balance. For example, it had 118 reviews from critics and 2407 reviews from ordinary users for the GOW game. After balancing, we had 16 groups of reviews from ordinary users with 118 reviews.

Fig. 2 illustrates a comparative analysis between critics and ordinary users, considering the frequencies of the elements of electronic games and story, gameplay, visuals classified as positive, neutral, or negative categories. The grades awarded the review support the frequency by category. On the other hand, Fig. 3 exhibits a comparative analysis between critics and ordinary users considering the relationship between nouns and adjectives (the feeling expressed). Fig. 2 and 3 illustrate the results of these comparative analysis for GOW, RDR2, Uncharted 4 and Overwatch games.

TABLE III
THE BALANCED NUMBER OF GROUPS FORMED FROM CRITICS (C) TO ORDINARY USERS (UC) FOR GOW, RDR2, UNCHARTED 4, AND OVERWATCH GAMES.

Nouns	Games							
	GOW		RDR2		U4		OW	
	C	UC	C	UC	C	UC	C	UC
Number of Groups	1	16	1	19	1	12	1	8
Group Size	118		98		113		31	

It is noteworthy to observe a difference between the two approaches: frequency by category and feelings. In the analysis of feelings, we noticed that frequency decreases concerning a category. For example, even if the element is part of a positive review, the analysis may be expressing a neutral or negative

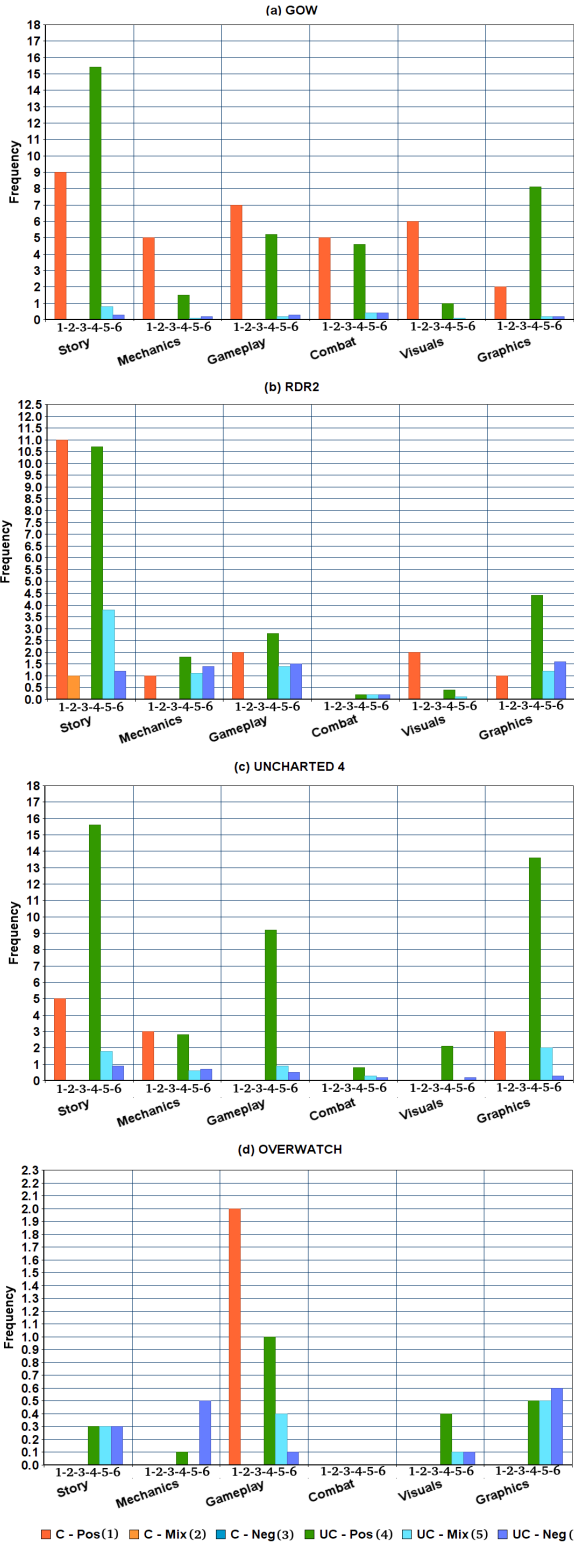


Fig. 2. Frequency by category of GOW, RDR2, Uncharted 4 and Overwatch games. Ordinary Users (UC), and Critics (C)

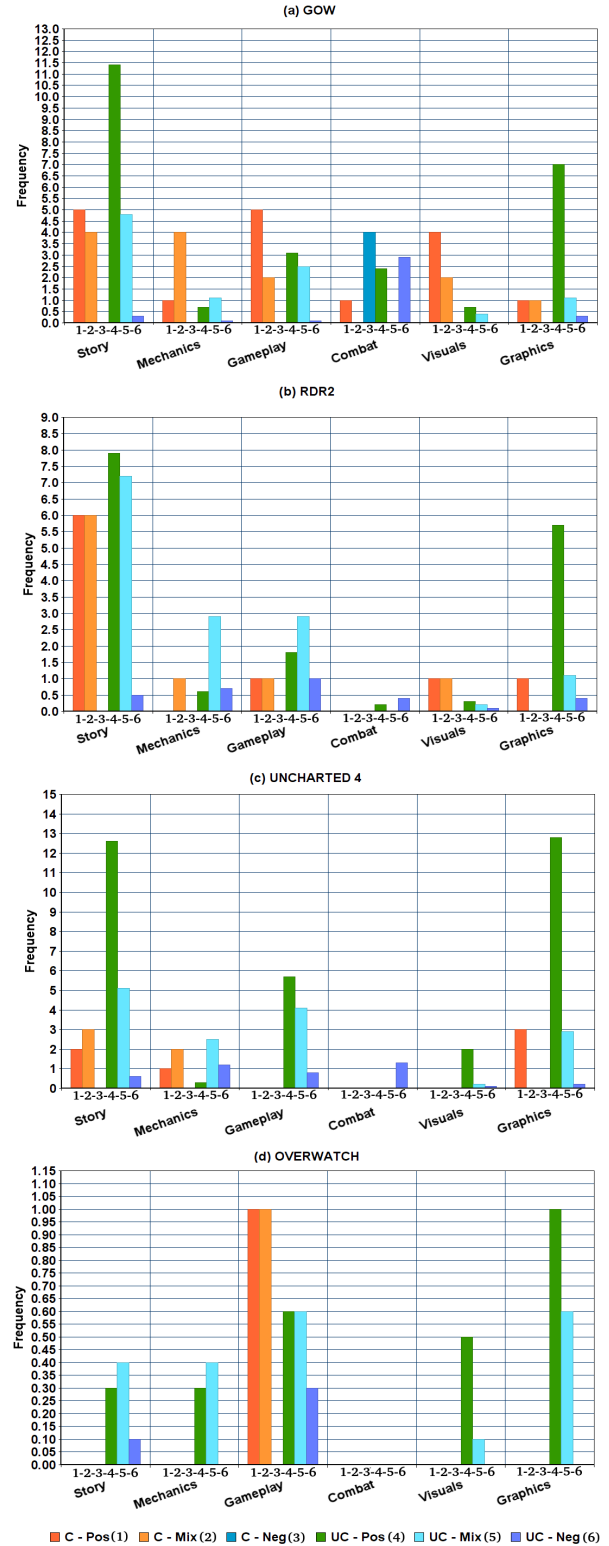


Fig. 3. Frequency by feelings of GOW, RDR2, U4 and OW games. Ordinary Users (UC) and Critics (C)

feeling. It may be a problem because our method considers

the review category, e.g., its evaluation.

The GOW game has been rated positively by the story by

both critics and ordinary users. However, it was noticeable that ordinary users are more likely to analyze the game's plot. Regarding the gameplay elements, in the GOW game, critics use the words **mechanics**, **gameplay** and **combat** on an equal basis, unlike ordinary users who do not often use the noun **mechanics**. In the analysis by categories, **combat** was found in the positive reviews. With the analysis of feelings, although **combat** is in positive reviews, this element had negative feelings for both types of users. Finally, the GOW game has visual elements positively rated, but the critics used the **visuals** more often, unlike users who used **graphics**.

Like GOW, the RDR2 and Uncharted 4 games had a higher frequency of adjectives referring to the game's story. It is noteworthy that RDR2 and Uncharted 4 won the TGA Best Narrative Award of their respective release years. Critics noticed a balance between positive and neutral feelings regarding the plot in the three games (Fig. 2(a)(b)(c) and Fig. 3(a)(b)(c)). On the other hand, part of the users considered GOW and Uncharted 4 had a higher frequency of positive feelings in the story (Fig. 2(a)(c) and Fig. 3(a)(c)). Similar to both games, the RDR2 plot analysis balanced both users' positive and mixed feelings. Uncharted 4, GOW, and RDR2 had a pretty high average rating from users for the visual element. We observed that ordinary users expressed their feelings more easily than critics. This situation is noticeable in the average feelings of the **story** element (Fig. 2 and Fig. 3).

The Overwatch game had lower averages than the elements of video games analyzed, mainly by critics. It may be related to the small number of reviews obtained to perform the analysis. Overwatch won as the best game of the year in 2016, so we expected higher frequencies.

To answer RQ4, we balanced the processing by creating groups with the same amount of reviews between critics' reviews and ordinary users' reviews, as explained before. We compared critics against critics, and ordinary users against ordinary users to verify which game would have better results compared to the elements investigated. We created only one group to make these comparisons. After balancing, the GOW and RDR2 dispute had a group of 98 of critics' reviews and 2008 of ordinary users' reviews for each game. The contest between Uncharted 4 and Overwatch had a group of 31 of critics' reviews and 293 of ordinary users' reviews for each game.

Fig. 4 depicts a comparison of frequencies by categories and feelings, taking into account the best match of the year 2018 between GOW and RDR2. Fig. 5 considers the best game competition of the year 2016 between Uncharted 4 and Overwatch. In Fig. 4(a), the frequencies by categories manipulated the critics' reviews, and compared GOW and RDR2. On the other hand, in Fig. 4(b), the comparison was considering the feelings frequencies of the critics' reviews for the GOW and RDR2 games. Finally, in Fig. 4(c) and (d), the comparative was the frequencies by categories and the other by feelings, respectively, both related to ordinary users' reviews for GOW and RDR2 games. Fig. 5(a) and (b) illustrate comparisons of frequencies by categories and frequencies by

feelings. However, both were considering critics' reviews for the Uncharted 4 and Overwatch games. Finally, Fig. 5(c) illustrates the category frequencies taken from the ordinary users' reviews to Uncharted 4 and Overwatch games. Meanwhile, Fig. 5(d) shows the sentiment frequencies calculated from the ordinary users' reviews of Uncharted 4 and Overwatch games. Unlike the analysis used to answer RQ1 (a comparison between critics and ordinary users), the comparison used to answer RQ4 was between critics and critics and ordinary users and ordinary users but considering different games.

Regarding critics, RDR2 and GOW had stories with the same quality level because the difference was minimal, considering the analysis by feelings. On the other hand, ordinary users showed more often positive feelings about GOW gaming than RDR2. Ordinary users rated the story of RDR2 with neutral and negative feelings more often than GOW. Critics expressed few feelings about the gameplay and visual elements of the RDR2 game, while in GOW, we found a higher frequency of associated feelings. On the part of the users, GOW gameplay is better than RDR2. We observed many neutral and negative feelings about RDR2 gameplay, but GOW combat was severely criticized. This critique of GOW combat may be related to the fact that there have been changes in the game's combat style compared to its predecessors (GOW 1, 2, and 3) [12].

Still referring to the dispute between GOW and RDR2, ordinary users positively rated both games' visual elements. GOW won the TGA Best Game of the Year Award of 2018. Considering the reviews of critics on the Metacritic website, GOW would only lose the story to RDR2. On the other hand, due to the number of negative and neutral feelings in the reviews, it is clear that ordinary users tend to choose GOW as better than RDR2, considering gameplay and visual elements.

The low frequency of observed feelings did not allow our analysis in the dispute between Overwatch and Uncharted 4 on the critics' part. To ordinary users considering **graphics** and **story** element, Uncharted 4 wins Overwatch. Because Overwatch is a game focused on online disputes, it has no story mode [13]. Thus, there was no way to evaluate this feature.

Unlike Overwatch, Uncharted 4 has a story mode. Moreover, in 2016, Uncharted 4 won the TGA Best Narrative Award. In this context, Uncharted 4 had a high average of positive feelings. The gameplay of both games had balanced feelings. According to the ordinary users, Uncharted 4 would win the best game of the year award. However, in the 2016 TGA, the winner was Overwatch. At the time, online games were gaining ground in the world of electronic games. It may have contributed to Overwatch winning the prize.

Finally, we performed the analysis of feelings and categories for the Anthem, Jump Force, Left Alive, and Rage 2 games. However, the analyzed elements had no enough frequencies. Table IV shows the results obtained from the sentiment analysis using the VADER tool for the Anthem, Jump Force, Left Alive, and Rage 2 games. Anthem and JF games presented a shallow frequency of feelings, making impossible the performance of any analysis. The low frequency

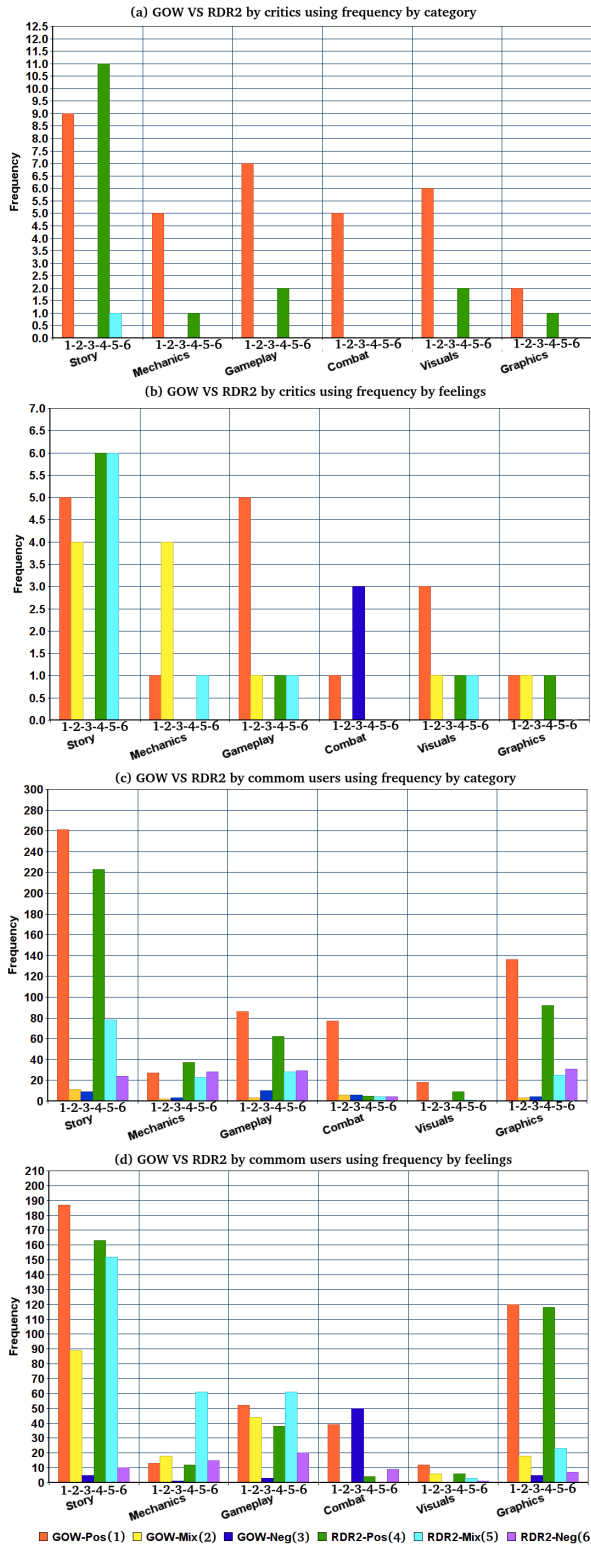


Fig. 4. Frequency by category and feeling between GOW and RDR2.

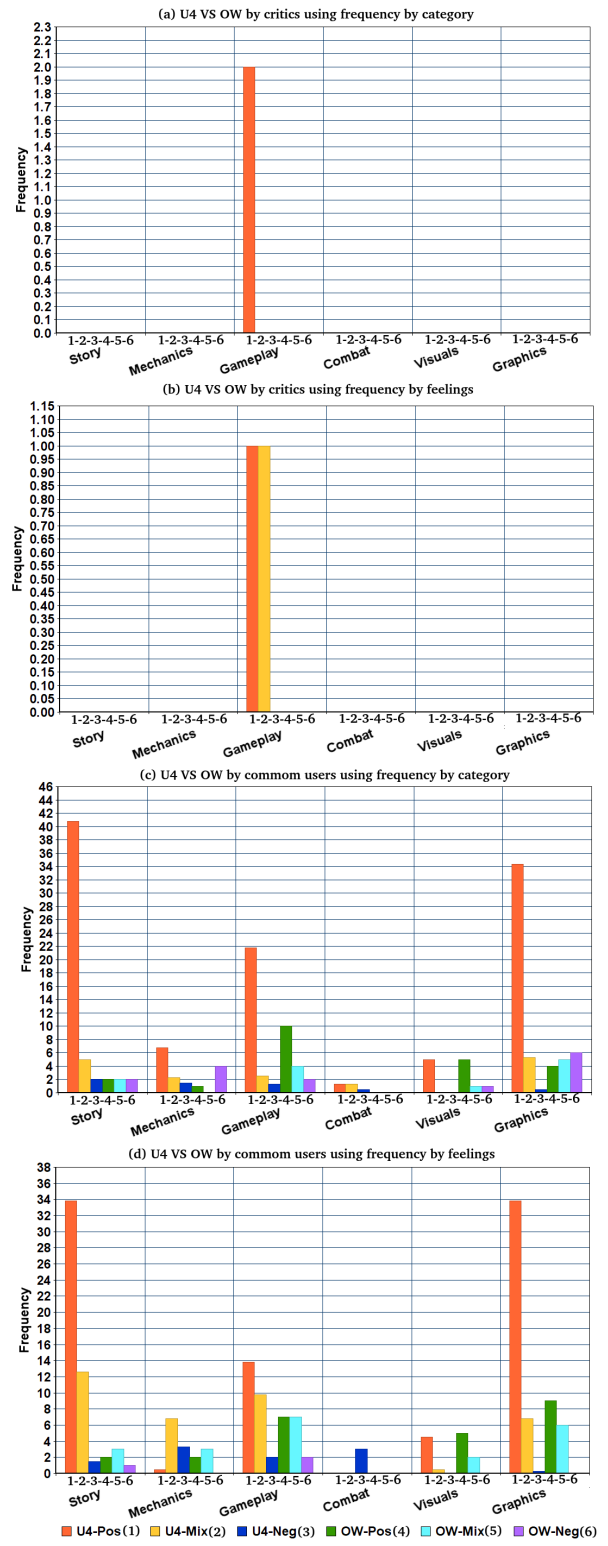


Fig. 5. Frequency by category and feeling between U4 and OW.

may be related to the reduced number of reviews obtained from both types of users.

Regarding Rage 2, there is a balance between the feelings expressed to the elements of this game. It may be the reason

this game has an average rating on the Metacritic website. Finally, Left alive was a surprise. In the Metacritic website, the game’s average rating assigned by critics was 37 points. The average game score given by ordinary users was 8.4. Observing the results after sentiment analysis by considering **story**, the average users expressed positive reviews on the game. It shows a divergence between the reviews of each type of user about that game.

TABLE IV

THE FEELING FREQUENCY OF ELEMENTS REVIEWED BY CRITICS (C) AND ORDINARY USERS (UC) IN LEFT ALIVE (LA) AND RAGE 2 GAMES.

Nouns	Feeling	Games			
		LA		Rage 2	
		C	UC	C	UC
Story	Pos	1.0	6.0	1.0	1.0
	Mix	0.0	2.0	2.0	4.0
	Neg	1.0	0.0	3.0	1.0
Mechanics	Pos	0.0	0.0	0.0	0.0
	Mix	1.0	3.0	1.0	1.0
	Neg	2.0	3.0	0.0	0.0
Gameplay	Pos	0.0	2.0	0.0	0.0
	Mix	0.0	0.0	1.0	0.0
	Neg	0.0	0.0	0.0	0.0
Combat	Pos	0.0	0.0	2.0	2.0
	Mix	0.0	0.0	0.0	0.0
	Neg	0.0	0.0	2.0	1.0
Graphics	Pos	0.0	1.0	0.0	4.0
	Mix	0.0	1.0	0.0	0.0
	Neg	0.0	0.0	0.0	1.0
Group Size		39		43	
Number of Groups		1	1	1	1

IV. CONCLUSION

Our investigations aimed to answer the following questions: (RQ1) Are there divergence (or similarity) in the reviews between ordinary and critical users for each game by considering gameplay, audios, visuals, multiplayer, and story? (RQ2) What characteristics (gameplay, audios, visuals, multiplayer, and story) of the electronic games that ordinary users rate? (RQ3) What characteristics (gameplay, audios, visuals, multiplayer, and story) of electronic games that critics rate? (RQ4) Considering the games nominated to compete for the best game of the year award at TGA, does one have the best result for the gameplay, audio, visual, multiplayer, and story features?

We applied morphological analysis to identify the most qualified elements in the games’ reviews and verify the story’s use, gameplay, visuals, audios, and multiplayer characteristics. We observed that the **story** element, the narrative of electronic games, is the noun with more adjectives in reviews, either by critics or by ordinary users. We also noticed that ordinary users use **graphics** more frequently when they are commenting on game visuals. Moreover, critics use more terms to refer to gameplay than ordinary users. By considering these results, we approached RQ2 and RQ3.

To answer questions RQ1 and Q4, we calculated the frequency of qualification of elements as positive, neutral (mixed), and negative by the two types of users. In another

approach, the frequency of elements included the analysis of feelings of the relationships between adjectives and nouns. Therefore, the relationship was positive, neutral, or negative. In the best game match of the year, GOW (2018) and Uncharted 4 (2016) would win the best game match of their respective release years. At the 2016 TGA, Overwatch was the winner of the best game of the year award, and in 2018, GOW took the award [5], [15].

In general, it was possible to answer the RQs and, the results were impressive because we could observe keywords in electronic games by performing a simple morphological analysis. We answered the research questions raised in this paper.

This work’s limitations were related to the number of reviews obtained for some games, which were not significant for performing analysis. However, it was possible to obtain interesting results. Our future efforts aim to increase the number of reviews to perform analysis per game and user type. Another proposal is to compare users’ reviews, taking into account different platform versions (XBOX, Playstation, PC, and Nintendo). Another context for future work using this methodology would be to apply the same method to movies nominated for Oscars.

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