

VIZMO Game Browser: Accessing Video Games by Visual Style and Mood

Jin Ha Lee¹, Sungsoo (Ray) Hong², Hyerim Cho¹, Yea-Seul Kim²

iSchool ¹, Human-Centered Design and Engineering ², DUB Group

University of Washington, Seattle WA 98195, USA

{jinhalee, rayhong, chohr113, yeaseul}@uw.edu

ABSTRACT

Despite the growing interests in video games as consumer products as well as objects of research, current methods for accessing video games are limited. We present *Vizmo* as a new way of browsing video games based on their visual style and mood. In order to test the usability and usefulness of *Vizmo*, we asked 19 video game experts to evaluate their interaction with the tool. The results show that experts perceived *Vizmo* as a novel and aesthetically pleasing game discovery tool which would be most useful for game research on historical and aesthetic aspects. We discuss five key points for improving the design of *Vizmo* as well as our future plan for the next iteration of this prototype game browser.

Author Keywords

Video games; Visualization; Visual style; Mood; Metadata

ACM Classification Keywords

H.5.0. Information Interfaces and Presentation: General

INTRODUCTION

Video games play an increasingly widespread role in our social, cultural, and economic activities. It is important to provide a useful way to search and browse video games for a growing user base. However, previous research shows that despite increasing interest in and significance of video games, current descriptive practices and access methods are not sufficiently robust [2, 7]. Most of the currently available game-related websites only provide platform and genre as main access points other than basic descriptive information of video games such as game title, publisher, and developer. As a result, it is difficult, if not impossible, to search or browse games based on attributes describing the actual content of the game (e.g., plot, mood, theme, visual style).

Our work aims to fill this gap by exploring a novel method for improving users' access to video games. In particular, we test the usability of a prototype video game browser that

allows users to access games based on two types of metadata: mood and visual style. While we envision that *Vizmo* can potentially be useful for both game experts and general game players, in this paper we specifically study game experts as our first step. We seek to answer the following research questions focusing on the usability and usefulness of our browser:

RQ1. How do game experts rate the usability of our video game browser? How can we improve the user experience?

RQ2. Would browsing games by using mood and visual style metadata be useful? If so, what kinds of professional and personal tasks could benefit from such access methods?

RELATED WORK

Game Research in HCI

A substantial body of research related to various aspects of video games can be found in previous HCI literature including the design of games, usability of game interfaces, gamification, and so on. However, little research has been conducted on designing information retrieval systems for games, or understanding gamers' information behavior as they search, browse, collect, and organize games.

Outside of the video game domain, we found a few studies on designing and developing a browsing tool for other media types such as movies [8], images [14], or music [1]. The latter two studies as well as [5,9], in particular, implement and evaluate a browsing interface utilizing faceted metadata (i.e., data attributes organized into orthogonal set of categories (facets/dimensions) [3]) as an alternative to other dominant search/browse methods based on keywords or similarity [14]. Our design is also based on this approach as mood and visual style are represented as two different facets in *Vizmo*. Previous usability studies found that facet navigation can be an effective and convenient search method for users [5,14]. Users assessed the idea of using facets very positively [1], and despite the slower response time of their interface, they still preferred it stating the search experience was interesting and enjoyable [14]. Karlson et al. [5] found that facet navigation is especially effective when users are seeking information objects with certain characteristics. These studies highlight the usefulness of facets for accessing media objects.

It is also noteworthy that systems described in studies like [8] or [13] use mood metadata for browsing movies or generating music playlists. We envision that our work can

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

CHI 2015, April 18–23, 2015, Seoul, Republic of Korea.

Copyright is held by the owner/author(s). Publication rights licensed to ACM.

ACM 978-1-4503-3145-6/15/04...\$15.00.

<http://dx.doi.org/10.1145/2702123.2702264>.

complement such research by perhaps allowing the use of mood metadata for browsing multiple types of media including movies, music, and video games.

Previous Research Efforts

This work is part of a larger research project by the Game Metadata Research (GAMER) Group at University of Washington Information School and Seattle Interactive Media Museum, aiming to create a standardized metadata schema and a set of controlled vocabularies (i.e., standard lists of terms with definitions and specification of related terms for describing particular metadata elements) for describing video games [7]. In a series of user studies conducted as part of this research effort, both mood and visual style have been identified as potentially useful elements for accessing games. In an online survey involving 1,257 participants, 66.7% responded that mood/affect information would be useful for the games they are currently playing or for seeking new games to play, and 53.4% for visual style [7]. Of the 237 respondents who reported having game-related professions, 70.9% and 55.3% responded positively for mood/affect and visual style, respectively. Interview data from 56 game users [7] also supports the importance of such metadata:

P42: Super Mario Bros. where they're like pixelated, my younger kids are going to look at that and go "Oh the graphics, gross" but the patrons my age that grew up with this are going to say "Oh my gosh, flashback to childhood, I want this!" So people have a very strong response to the visual look of the game."

P28: I think [mood] is often times why people choose [certain games], well why did you choose the one where you could only kill zombies with household appliances? I picked it because it was funny...you know, this is a comical way to prevent the apocalypse versus a very serious way to prevent the apocalypse, which I think might be a good way to organize."

Based on the user data, we decided to include visual style and mood in our video game metadata schema. In order to consistently describe these attributes, it is necessary to establish a controlled vocabulary for each element. We established the initial list of terms by collecting candidate mood terms from a number of media object websites that use mood taxonomy, including Movie Genome Project, gamerDNA.com, allmusic.com, etc. The candidate visual style terms were sourced from previous scholarly literature including [4,6,11] in addition to designer forums and video game art appreciation websites. From the initial lists, duplicate and irrelevant terms were removed. Afterwards, each term was defined, and the hierarchical, equivalent, and associative relationships among terms were identified.

The terms were evaluated based on multiple aspects, primarily their understandability (e.g., do people understand what we mean by "cel-shaded?") and usability (e.g., can people use these terms to describe the games they played?). Based on the users' feedback, the controlled vocabularies were revised for easier and more consistent application. The two main changes were to 1) simplify the initial list by

reducing the number of terms, and 2) removing technical visual style terms (i.e., terms referring to the techniques for rendering certain images such as rasterized or ray traced). More information on this phase can be found in [2].

DESIGN OF VIZMO

Vizmo is a web-based visualization interface built on Javascript and D3 (<http://d3js.org/>). The interface consists of four main components: selectors, navigable timeline, title list browser, and detailed information box area.

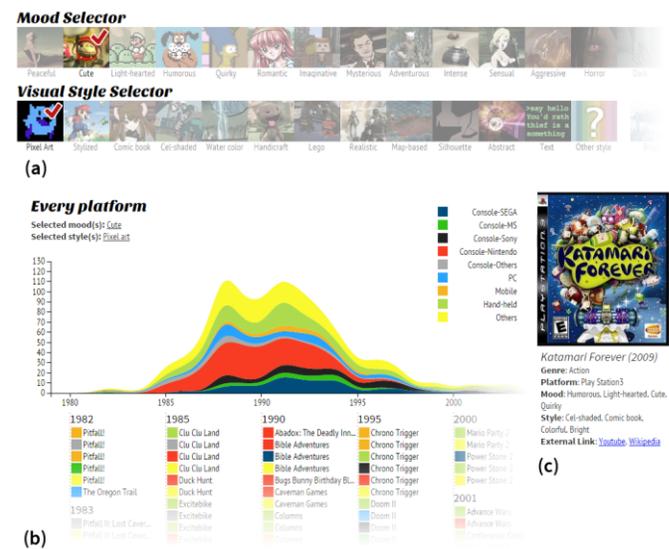


Figure 1. Vizmo visual interface. (a) Mood and Visual style selector; (b) Navigable stack area graph and title browser; (c) Title detail (accessible at: <http://vizmo.mooco.com>)

The selectors for mood and visual style are prominently positioned at the top of the page. In prior research, we discovered that users had difficulty understanding visual styles of game solely based on terms and definitions; rather, showing examples of games that fit into each category was much more effective [7]. Therefore we created icons based on prototypical examples of games for each visual style, and embedded them in the selector as visual cues. In order to make the interface consistent, we also added icons representing different moods of video games.

The order of the mood terms was determined based on previous research on mood in Psychology, specifically the Tellegen-Watson's circular mood model [12]. Our mood terms were ordered to approximately match the clockwise order of the mood clusters in their model. The selector for visual style has three groups (i.e., style, brightness, and colorfulness) divided by whitespaces. The users can select and unselect the multiple moods and visual styles at the same time and the results showing the relevant games will dynamically change, accordingly.

The navigable timeline is dynamically generated to show the quantity and distribution of the games by platform and published year of the game titles that match the categories of

mood and visual style selected by the user. Concurrently, all the selected game titles are listed below. The first layer of the chart is representing nine broad categories of game platforms (e.g., console-MS, console-Sony, console-Nintendo, PC, Mobile). Once the user clicks a specific area in the chart, the result will be divided into sub-categories showing more detailed platform information (e.g., console-Nintendo will be divided into Wii U, Wii, etc.). The colors representing the platforms are taken from the logo of the company (e.g., red for Nintendo) or color of the physical consoles (e.g., gray/black for Sony PlayStation). In the second layer, we applied sequential hue for color coding so that the brightness corresponds to the order of the launching date of the platforms; the newer platforms with darker hues.

In the title list browser, we present the game titles as entry points for users to get to the detailed view. When the users hover over the list of game titles, the pop-up image will show a representative image of the game. Once the user selects a specific game, detailed information will appear in the info box at the right bottom corner. The design of the timeline and info box reflects Shneiderman's principle of interface design that the visualization should give the overview first and provide detail-on-demand [10].

The game data shown in Vizmo is derived from 604 sample video game metadata records [7]. Vizmo is currently in a prototype stage and therefore there are a limited number of records being used to generate the results. For games that have multiple versions (e.g., ports, remakes), the published year is set to represent the year when the original version of the game was published.

USABILITY TESTING

We conducted a usability study involving 19 participants. We specifically recruited users who have game-related professions to explore how useful Vizmo may be for professional game-related information retrieval tasks in addition to personal tasks. Participants were recruited initially through the authors' professional and social networks, and additional participants were found by snowball sampling. While the subjects came from various backgrounds and professions, every one of them had at least one year of work experience in the game industry and had in-depth knowledge of the domain. The participants were asked to freely explore the browser and fill out an online post-task questionnaire. We asked questions regarding their opinions on the usability of the browser, design of the selectors, presentation of results, and usefulness of the tool. They were also encouraged to provide suggestions for improvement.

FINDINGS AND DISCUSSION

Demographics

The age of participants ranged from 20 to 60 with an average of 36, and 68% of participants were male. Eight participants had more than ten years of game-related work experience. Some examples of the respondents' occupations include

game designer, developer, analyst, reviewer, researcher, and librarian.

Usability of Vizmo

Overall, 13 respondents expressed that Vizmo was easy to use and the design was intuitive. One user specifically mentioned that he/she appreciated the minimal design:

P14: It's all quite easy to use and simple, no need to over complicate something that has a fairly narrow purpose. Honestly I thought the timeline presentation of when the games were released and for which platform was the coolest feature.

They also noted that the interface is visually attractive (P16) and the selectors provided them with some new insights into how to browse games (P8: "I like these a great deal. They are a fresh way to think about game genres.").

The most common comment was regarding the matching algorithm for selecting games which is set to be additive (search criteria are combined with an OR operator). Seven out of 19 respondents thought they would like to be able to have an 'AND' relationship so that they can narrow down the results, or at least to have options to choose 'OR', 'AND' or 'NOT' for the search.

The intention of using representative icons in the selectors was to provide users with visual cues. However, some users felt that this could potentially be misleading.

P9: It makes sense for the VISUAL selector as the combination of the category words and the sample aesthetic from an example game give a good sense of what to expect in results, but using game graphics on MOOD has some side effects: for the gamer who is familiar with the games the example image may be mislead[ing] given their experience of mood in that game, and those unfamiliar are really going on an interpretation of the category word anyway...

P18: The images are somewhat representative, but perhaps not as good as a tooltip with a definition.

Two respondents (P10, P17) specifically mentioned that they wanted to be able to click the platform legend rather than having to click on the areas in the timeline to pull up the results. One participant suggested the results to be presented in a different way by showing "some top picks from that combination, or something simpler than having to scroll down to find suggestions. (P1)"

Usefulness of Vizmo

We asked how/whether Vizmo would be useful to users personally or professionally. Fifteen participants found Vizmo useful, mainly for video game research as it provides a historical view with the timeline and allows a more aesthetic approach for finding games.

P4: It will be useful for analyzing what kinds of game genres were popular over time. I can see visual directors or artists using this to search for games with a similar tone.

P6: Primarily I would find it useful for garnering game ideas, potentially useful in research, or finding a game related to a particular idea or feeling. Being able to find an action game

whose thematic elements are similar seems really interesting.

P17: As a reviewer, I see myself using this to track trends...I could make statements in my reviews like, "2009 was a rough year for comedic games. The quirky indie explosion of the teens had yet to happen..."

A couple of participants mentioned how Vizmo may appeal more to users who are less knowledgeable about games, and also hinted how it may be improved with personalization features:

P3: The less a player knows about available games, the more they would benefit. If you have a lot of information already, this is less useful, though it might help with jogging one's memory.

P13: The tool asks no questions about the user's preferences or gaming history, and not enough information about the games in the end to help shape a decision of what to play or how the listed games are related or similar.

Although the mood/visual style selectors provide new ways to browse games, the respondents thought providing more options to filter out the games would be useful. Some respondents specifically expressed that this would also help address the subjective nature of metadata.

P9: As-is this is more useful for a media aesthetics approach to games, but if you added some kind of ergonomic experience selector...[it] would be quite useful for my teaching goals. Something that lets you search for the kinds of challenge or "non-trivial effort" that the game emphasizes.

P19: They are useful but subjective. It would be useful for searchers to have a place to click for the rating as a third option and single vs. multi-player as a fourth option.

There were several comments about the usefulness of Vizmo in relation to other existing websites (e.g., P3: "Perhaps personally [I would use it] on a service like Steam.") suggesting the importance of seeking collaboration to potentially use information such as play history/personal preference for better browsing experience.

CONCLUSION

Game experts perceived Vizmo to be an aesthetically pleasing game browser, which offers a novel approach to accessing games. Feedback indicates that Vizmo can be useful for game research on historical and aesthetic aspects. The key points from our usability test are:

1. Provide multiple options for selecting categories
2. Provide definitions in addition to icons
3. Make the platform legend selectable in the timeline
4. Provide more filtering options such as genre or rating
5. Seek integration with existing services

In our future work, we plan to conduct a follow-up study with the improved version of Vizmo involving general game players to further evaluate its usefulness and usability. We also plan to expand our selectors to include other novel access methods for discovering games such as tropes, plot, theme, setting, and appeal factors/motivations for playing games in order to increase the usefulness of Vizmo.

ACKNOWLEDGMENTS

We thank Stephanie Rossi, Carl Gellert, and the GA crew at University of Washington iSchool for collecting the data. This research is supported by the UW Office of Research.

REFERENCES

1. Dachsel, R. and Frisch, M. Mambo: a facet-based zoomable music browser. In *Proc. MUM '07*, ACM (2007), 110-117.
2. Donovan, A., Cho, H., Magnifico, C., and Lee, J. H. Pretty as a pixel: issues and challenges in developing a controlled vocabulary for video game visual styles. In *Proc. JCDL '13*, ACM (2013), 412-414.
3. Hearst, M. A. Clustering versus faceted categories for information exploration. *Commun. ACM* 49, 4, (2006), 59-61.
4. Järvinen, A. Gran stylissimo: The audiovisual elements and styles in computer and video games. In *Proc. CDGC*, Tampere University Press (2002), 113-128.
5. Karlson, A. K., Robertson, G. G., Robbins, D. C., Czerwinski, M. P., and Smith, G. R. FaThumb: a facet-based interface for mobile search. In *Proc. CHI*, ACM (2006), 711-720.
6. Kyprianidis, J., Collomosse, J., Wang, T., and Isenberg, T. State of the art: A taxonomy of artistic stylization techniques for images and video. In *IEEE Trans. Vis. Comput. Graphics*, IEEE (2012), 1-20.
7. Lee, J. H., Clarke, R. I., and Perti, A. Empirical evaluation of metadata for video games and interactive media. *JASIST*, in press.
8. Martins, P., Langlois, T. and Chambel, T. MovieClouds: content-based overviews and exploratory browsing of movies. In *Proc. MindTrek '11*, ACM (2011), 133-140.
9. Medynskiy, Y., Dontcheva, M., and Drucker, S. M. Exploring websites through contextual facets. In *Proc. CHI 2009*, ACM (2009), 2013-2022.
10. Shneiderman, B. The eyes have it: a task by data type taxonomy for information visualizations. In *IEEE Sym. on Visual Languages*, IEEE (1996), 336-343.
11. Tavinor, G. *The art of video games*. Wiley-Blackwell, Malden, MA, 2009.
12. Tellegen, A., Watson, D., and Clark, L. A. On the dimensional and hierarchical structure of affect. *Psychological Science*, 10, 4, (1999), 297-303.
13. Van Gulik, R. and Vignoli, F. Visual playlist generation on the artist map. In *Proc. ISMIR '05*, (2005), 520-523.
14. Yee, K.-P., Swearingen, K., Li, K., and Hearst, M. Faceted metadata for image search and browsing. In *Proc. CHI 2003*, ACM (2003), 401-408.