

Stylometry Analysis on Games with Similar Style

Ong Zhi Xiang, James Raphael Tiovalen, Koh Hui Juan

Background

Genshin Impact, an open world role-playing game (RPG) by miHoYo, has become the 29th top revenue-generating mobile game globally despite its recent release on 28 September 2020, generating about \$6 million a day on average so far.[1] However, when the game was released, a huge controversy was sparked regarding the close similarity to The Legend of Zelda: Breath of the Wild (Zelda BOTW), with some even suggesting Genshin Impact to be a clone of Zelda BOTW, especially the visual stylization in particular.

However, most comparative studies of this controversy have been done via the critical analysis of the two games' interactions and stylistics, similar to "close reading" of literary texts, without any references to other open world RPG games. This leads to a few weaknesses. Firstly, we cannot conclude on the influence of Zelda BOTW on Genshin Impact by merely comparing the two games. A more complete analysis would require the investigation on the dissimilarity between these two games and other open world RPG games, to conclude that the similarities were inspired by Zelda BOTW, and not common features amongst open world RPG games. However, if we were to do so, it would pose a huge difficulty in terms of time and accuracy. Secondly, analysis on features like hues of the background or the way the character glides in the air could be rather subjective. These led us to wonder if there was a possibility of analysing the stylometry of games via computational methods, similar to "distant reading". This would enhance time efficiency as well as objectivity of the study.

After researching what constitutes an infringement of copyright of a video game, we decided to focus on the comparison of specific art choices and original music between the two games, both of which are protected under the Copyright Law and also the main subjects of the controversy. An additional line of reasoning would be that because both games implemented cel-shading for their art style and incorporated the usage of sparse and short phrases of musical elements whenever the player travels through the different in-game landscapes. Since a game's scènes-à-faire and mechanics are not protected within the copyright law, we have decided to not compare those elements as well.

We chose Genshin Impact because of its significance within the gaming community, having won the "Mobile Game of the Year" awards from both Google and Apple.[2][3] Admittedly, there are other games which exhibit a similarly striking sense of similarity with BOTW such as Decay of Logos and Immortals Fenyx Rising. However, for the purposes of this research, we just chose one such game (which is Genshin Impact) as a case study due to its level of

popularity within the gaming community. Future studies could always be conducted to further analyze how similar Decay of Logos and Immortals Fenyx Rising are in comparison to Zelda BOTW.

Research Question

This leads to our research question. Did Genshin Impact cross ethical or legal copyright lines in terms of level of similarity of art style and musicology to Zelda BOTW? Did miHoYo perform plagiarism against Nintendo, or was this imitation simply a sincere form of flattery? In other words, we are investigating the influence of Zelda BOTW on Genshin Impact. To do so, on top of comparing the similarity between these two games, the dissimilarity between them and other open-world RPG games ought to be compared as well.

Significance/Relevance to the Humanities

Stylometry is a very important aspect of digital humanities. Creative works such as video games still have poorly defined boundaries currently defined in the copyright law. This is because video games and its protection under the copyright law is a relatively new concept. While there have been numerous lawsuits made between Triple-A video game companies over certain games,¹ they were usually abandoned in the end due to both companies still earning plenty of revenue and profit from said games. Those lawsuits that proceeded leave the legal institutions with some confusion since it is difficult to quantify how similar two video games are. This might also leave smaller video game companies or individuals at a disadvantage since their original ideas might be stolen by larger companies with no ways of justification in front of the law. While we admit that no creative works are arguably made without any external influence whatsoever, there exists a legal and ethical line beyond which inspiration becomes imitation and emulation becomes plagiarism. As such, through this study, we attempt to at least identify the degree of inspiration and similarity between two AAA games, Zelda BOTW and Genshin Impact, in order to inspect how much influence BOTW has on Genshin Impact, if any, as well as to stimulate more stylometric research on video games in the future.

¹ Refer to the Other References section for some articles discussing the various video game-related lawsuits that have occurred in the past.

Use of Computational and Humanities Scholarship

Musicology

The method of using “Librosa” and FFT to extract frequency data of the audio files before making spectrum plots and heatmap plots is inspired from another visual audio comparison project which studied the differences of 3 different versions of “Yesterday”, a song by the Beatles.[4] In our case, we shifted the focus from analyzing the differences in similar songs to analyzing the similarities between audio files of two video games, which is essentially the comparison of groups of audio files instead of individual audio files. In terms of the humanities aspect, we were inspired by the development of a tool called GameSound, a video game sound effects database created by ludomusicology researchers in an attempt to inspect how in-game sound effects, prompts, dialogues, or subtle actions could trigger certain reactions from the player.[5] In this research, instead of focusing on how the player reacts to a game, we attempt to analyze how the games themselves possess a certain style in their artistic pieces.

Artistic Stylization

The idea to use ImagePlot to analyse and categorize different screenshots according to their characteristic comes from a research conducted by Cody Mejeur in an attempt to visualize how games portray their narrative forms in a shifting, emergent and playful way.[6] In the research, the author attempted to visualize how the game *P.T.* evolves its narrative to the player by plotting screenshots of the game’s playthrough using ImagePlot. The author then showed how each piece of the game’s narrative is connected to each other by comparing multiple playthroughs of the game. Instead of focusing on the narrative of the game, in this research, we attempt to analyze the overall style of Genshin Impact and Zelda BOTW by taking in-game screenshots as well.

Overall, we obtained inspiration from computational and humanities scholarship of different fields, including game and music, and combined them together to develop a methodology that is suitable for our area of interest in our research.

Dataset and Methodology

To conduct the project, we require two types of datasets: audio files and gameplay screenshots.

Musicology

We have retrieved the audio files of the two games from online sources. Using these files as our dataset, we employ multiple tactics in tackling the auditory analysis aspect of this research.

Firstly, these audio files were analysed using “Librosa”, a Python package, and the Fast Fourier Transform process. The audio files were processed and data on the frequency and amplitude of the audio files were extracted. The frequency data is then processed into spectrum plots and heatmap plots for visualization of data.

Audio files can then be categorized based on similar factors like location (i.e., village, house, town), event (i.e., battle music) and main theme audio, and compared, respectively. While future studies could explore comparisons of such similar themes, considering that location-based themes tend to be unique since they tend to be inspired by the musical styles of different countries such as Japan (Kakariko Village in Zelda BOTW), China (Liyue Harbour in Genshin Impact), Germany or Switzerland (Mondstadt City in Genshin Impact), and since main themes of the two games will most likely be significantly different (since main themes are usually used in advertising and marketing for gamers to identify the games), we have decided to compare the Field Theme, the Normal Battle Theme and the Special Battle Theme of the two games.

Secondly, we also attempted to measure the cross-correlation between two respective musical pieces which are claimed to be similar. This would serve as an additional element to complement the results of the spectrogram analysis. Our cross-correlation method would initially extract a so-called “fingerprint” of the respective audio files by using a chroma-based representation and the Chromaprint algorithm,[7] which would then be cross-correlated across the two different musical pieces. We chose a threshold of 0.5 to indicate that a match has been found.[8] We take inspiration from an article that employed this algorithm and merely modified their code to suit our needs.[9]

To obtain a control, we generated audio files of silence and white noise. This is to ensure that the comparisons were done in a fair manner. We also compared an audio file to itself to ensure that it would obtain a cross-correlation of 1.0 (since a musical piece should be identical to itself).

Artistic Stylization

As for the gameplay screenshots, there is limited data we could find online. Hence, we manually collected the data by playing the games and taking our own in-game screenshots of the artistic landscapes. Different screenshots of different landscapes will be taken on both Genshin Impact and Zelda BOTW. We set the parameters of the pictures to have a resolution

of 1080p and pixel density of 150 to 160ppi. These gameplay screenshots were plotted on ImagePlot, and visual information on the brightness, hues and saturation were obtained.

To analyse the artistic style of the game, we chose to compare the median brightness and median hue across all our different screenshots.

Gameplay screenshots with elements of similar attributes (i.e., waterfalls, cliffs, fields) were grouped together and compared against each other, for a better comparison between the two games. In addition, to ensure a fair comparison, we try to ensure the composition of our subjects remain largely similar (Figure 1).



Figure 1: Composition of the subjects are similar.

In order to get a more comprehensive dataset, we have decided to look at the screenshot at different periods. Genshin Impact gives the user the option to change the in-game time, with that we picked four screenshot instances of the in-game scene, namely during dawn (daybreak), noon, sunset and dusk (Figure 2).²



Figure 2a: Screenshots of gameplay from Genshin Impact across different times [in clockwise order: dawn, noon, dusk, sunset].

² An external tool called the Breath of the Wow Memory Editor was utilized to allow a more fine-grained control over the time of day.



Figure 2b: Screenshots of a rice field from The Legend of Zelda: Breath of the Wild across different times.

Results

Musicology Analysis

Our first attempt at musicology analysis of the two different games focuses on the spectrogram-related differences. The comparison results for the Field Theme, the Normal Battle Theme and the Special Battle Theme audio files of the two games are shown in the Spectrum Plots and Heatmap Plots below (Figure 3-5).



Figure 3: Zelda BOTW vs Genshin Impact Field Theme.

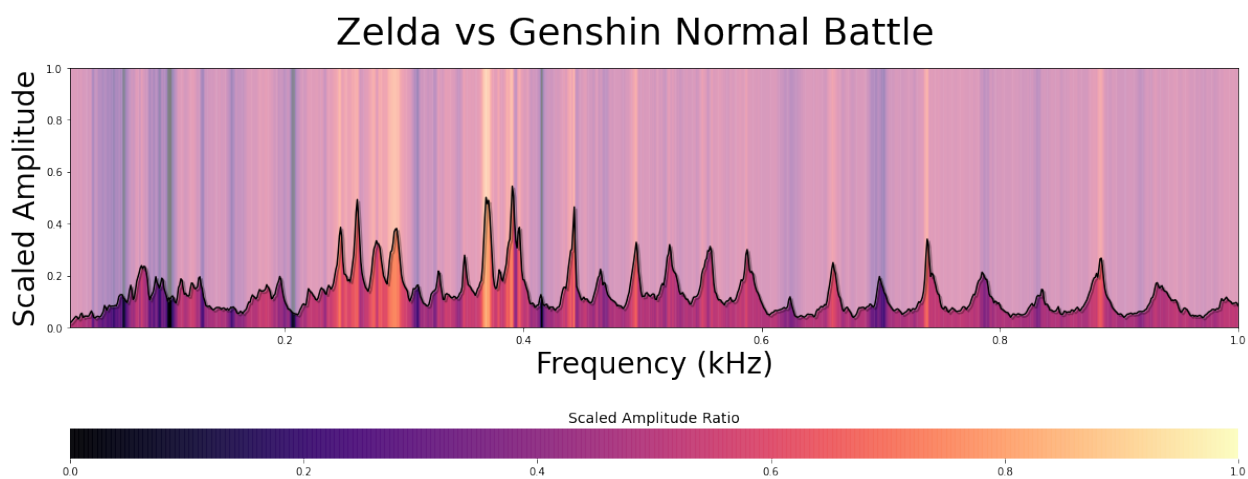
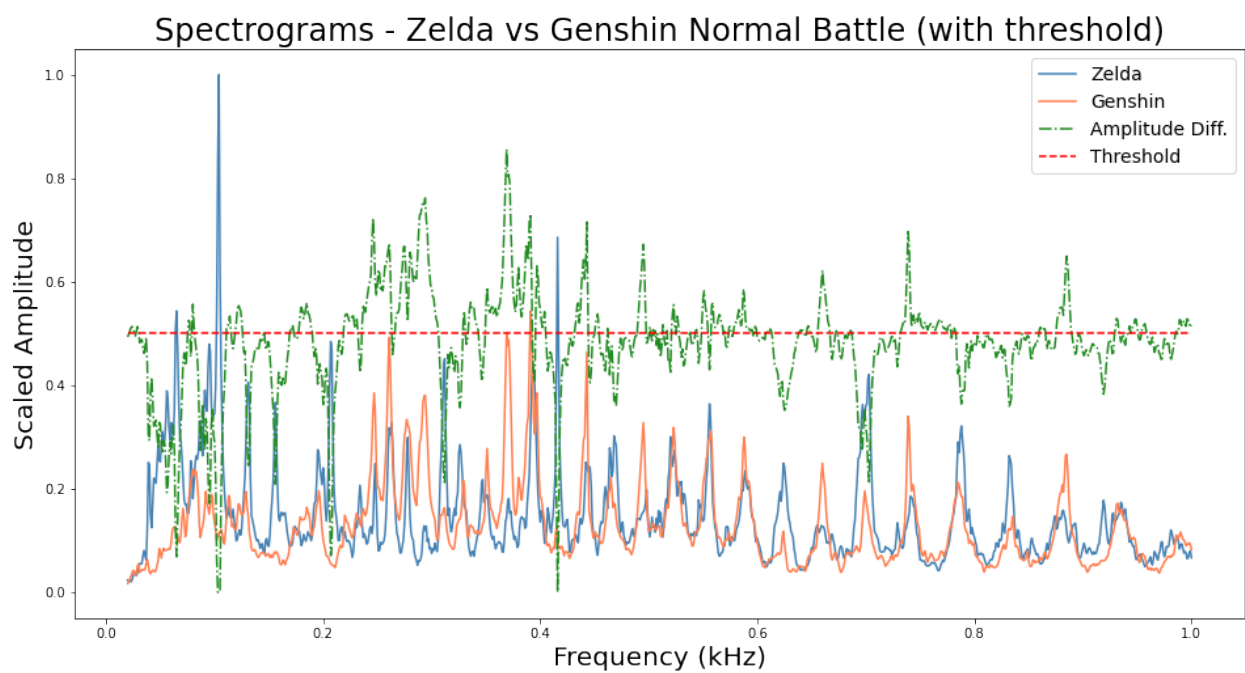


Figure 4: Zelda BOTW vs Genshin Impact Normal Battle Theme.

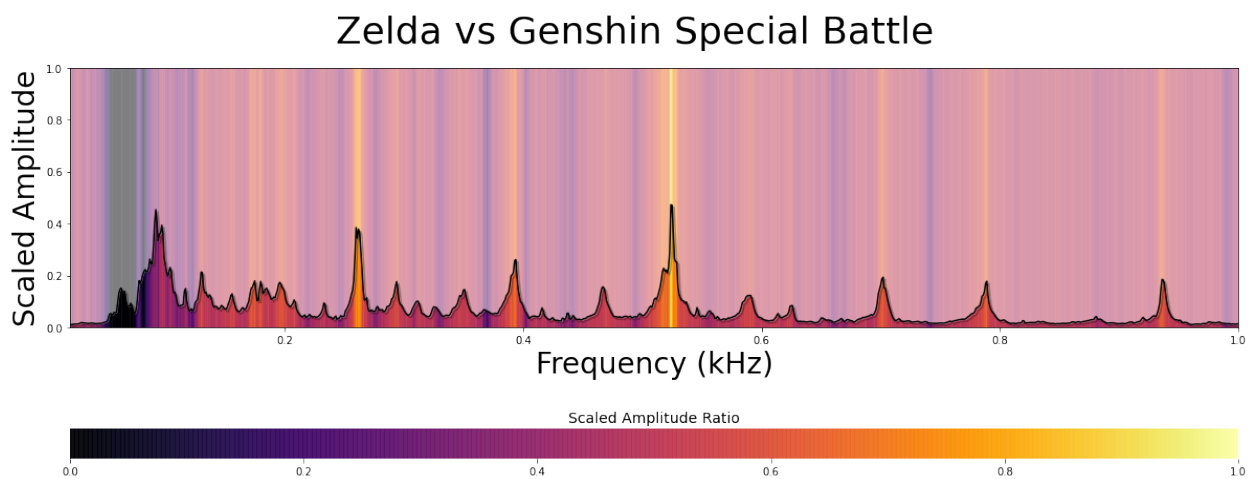
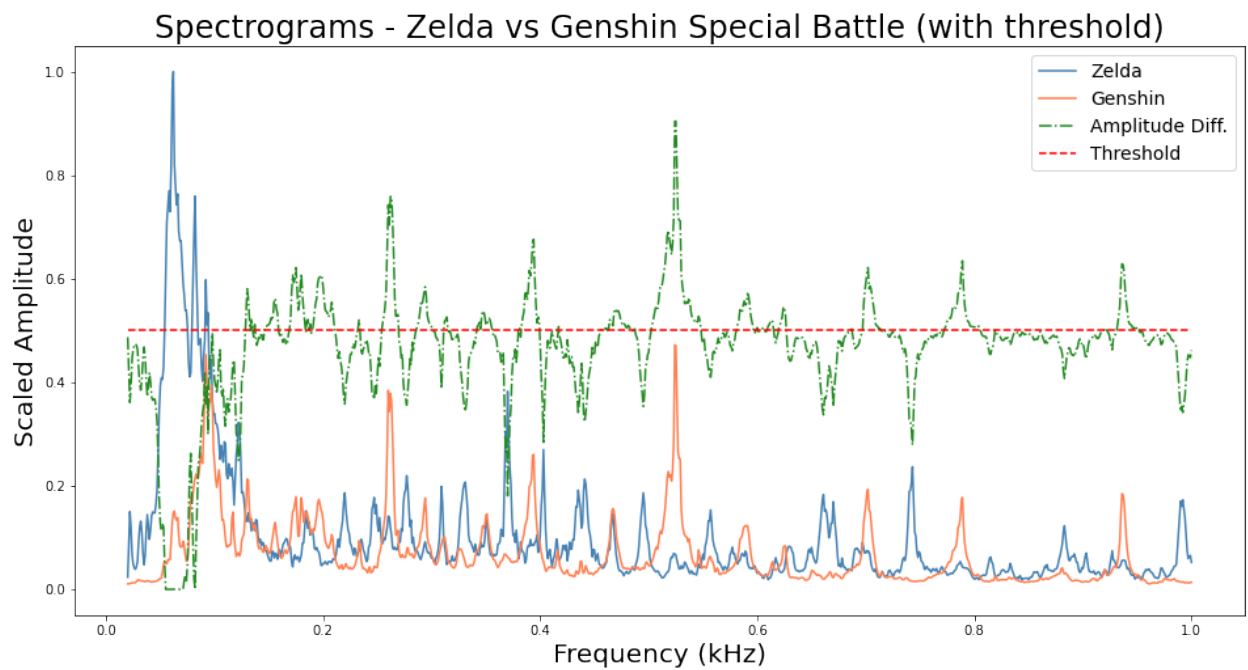


Figure 5: Zelda BOTW vs Genshin Impact Special Battle Theme.

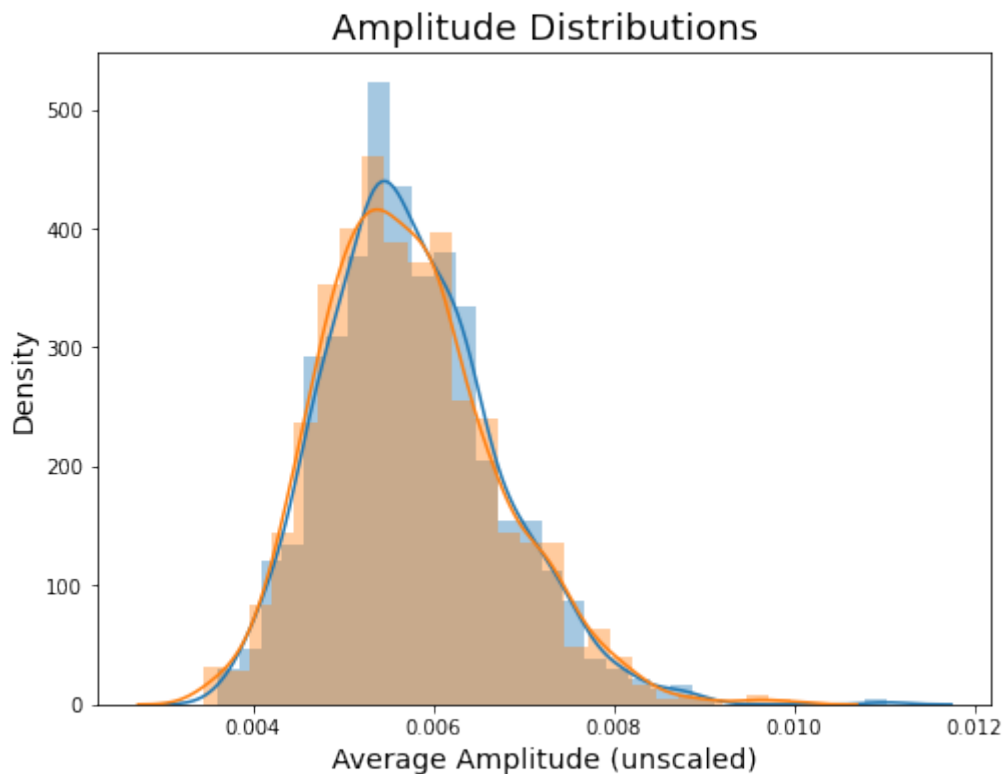


Figure 6: Zelda BOTW vs Zelda BOTW Field Music (Control).

As seen from the amplitude-frequency diagrams, it can be observed that the spectrograms of Zelda BOTW music and Genshin Impact music are sufficiently different.

Our second method yields a slightly different result. We calculated the cross-correlation values for these music files:

- Zelda BOTW Field vs Genshin Field: **0.5924 (59.24% correlated)**
- Zelda BOTW Normal Battle vs Genshin Normal Battle: **0.5076 (50.76% correlated)**
- Zelda BOTW Special Battle vs Genshin Special Battle: **0.5102 (51.02% correlated)**

Comparing all of our musical pieces to our two control audio files (white noise and silence) would not print any maximum correlation index since the level of similarity between our dataset and the two control audio files are below our threshold of **0.5**.

Comparing each of our musical pieces to itself would yield a maximum correlation index of **1.0**, as expected. This is because each audio file should be considered identical to itself. A density-amplitude graph of such a comparison of an audio file to itself is shown as an example (as shown in Figure 6).

Artistic Stylization Analysis

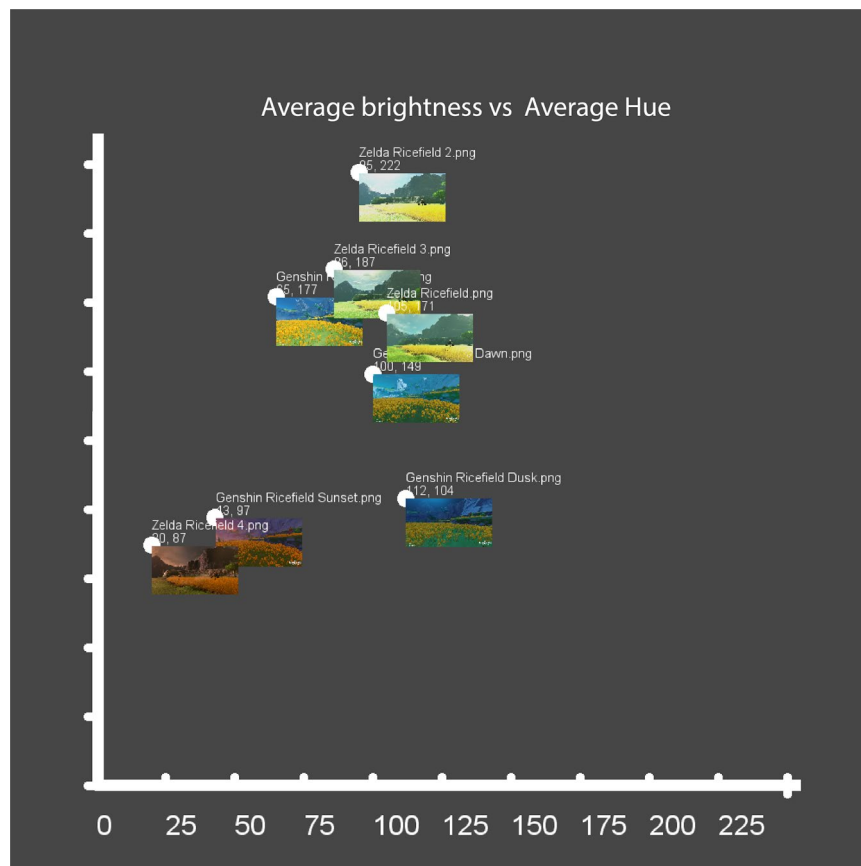


Figure 7: ImagePlot analysis on rice field in the two games.

Using ImagePlot, we proceeded to carry out an initial analysis on the common element rice field which is present in both of these games (Figure 7). The ImagePlot of the median brightness against median hue reveals some correlation across the elements in the game, this is represented by the close proximity of the image on the plot. This evidently conveys the message that Genshin Impact potentially influences off the work of Zelda BOTW, and thus prompts us to investigate for other similar trends and relationships in other gameplay subjects.

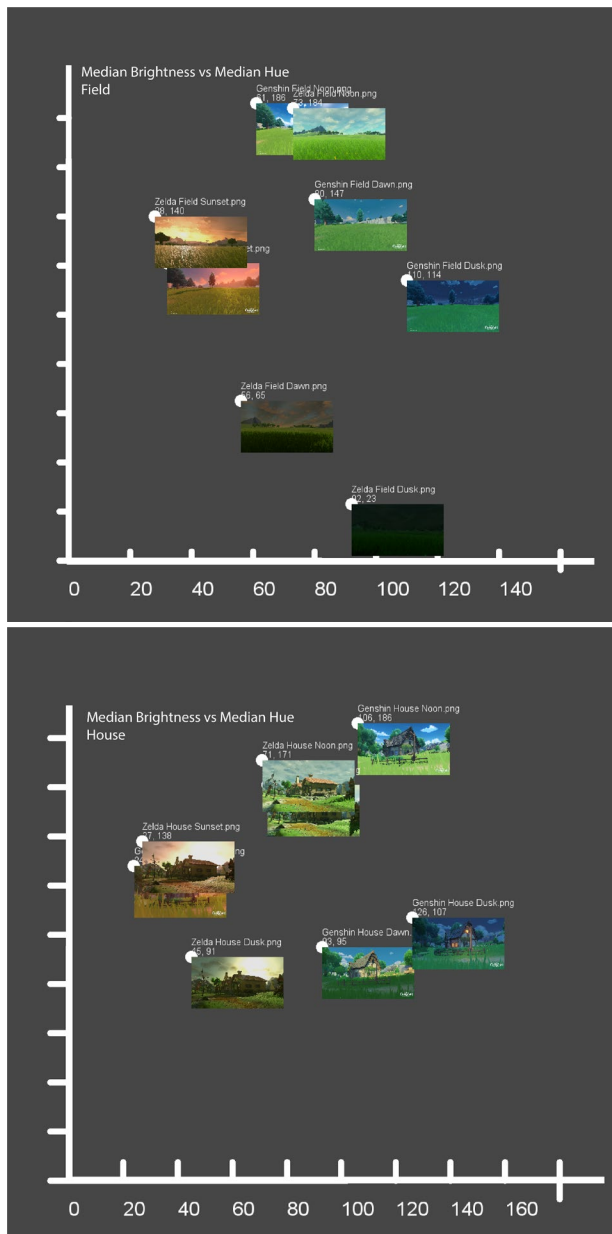


Figure 8: ImagePlot for the in-game element of Field and House.

Using similar techniques, we carried out ImagePlot of median brightness against median hue for 8 other in-game elements (beach, cathedral, cliff, grass field, house, lake, mountain and waterfall). We observe that for most of our case the correlation is stronger in the time comparison during sunset and noon (Figure 8), whereby the images have a higher median brightness and lower median hue. This is evident in Figure 8, if we were to take a look at the result of the field and house ImagePlot, the distance between corresponding images of comparison for the time period dusk and dawn are greater than those images during sunset and noon. This thus seems to suggest that in terms of artistic style during the noon and sunset settings, Genshin Impact adopts a similar art rendering approach to Zelda BOTW.

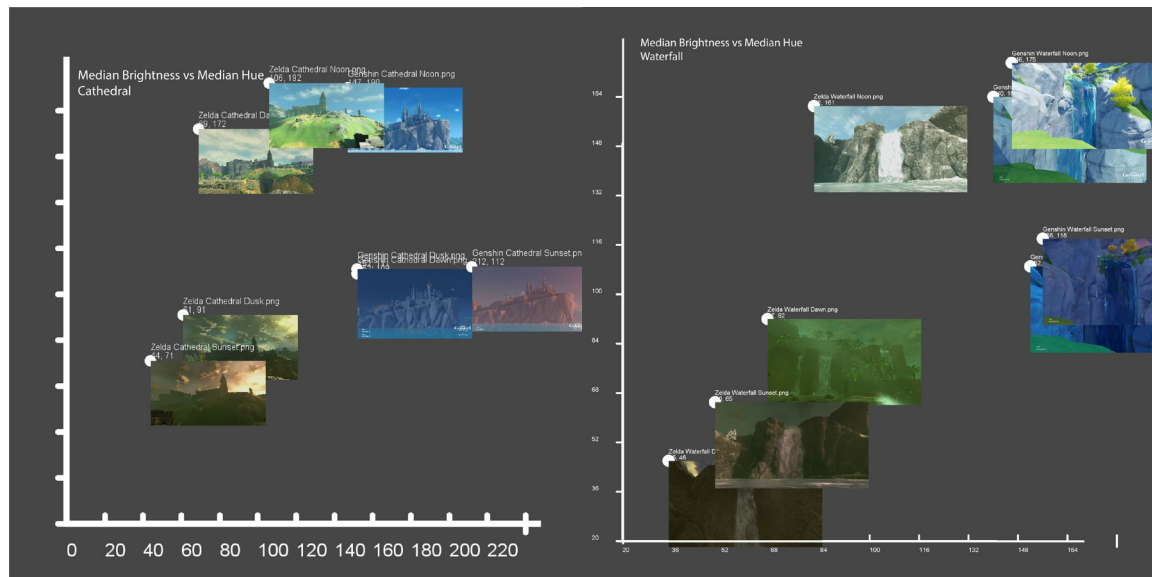


Figure 9a (left) and 9b (right): ImagePlot for in-game element of Cathedral and Waterfall, respectively.

Across our analysis, we do realise that there were some instances whereby the above claim does not hold true. When we were using the cathedral as a subject (Figure 9a), it is worth noting that the corresponding sunset screenshots are quite far apart as compared to the screenshots of the other time periods. We notice a similar behaviour for the ImagePlot of the waterfall element (Figure 9b). In both cases, however, their noon images are still quite strongly correlated, this is interesting because if we were to look at the plots, we notice that our previous mentioned claim fails when the brightness and hue value of the images of comparison falls below a certain median brightness level. In addition, we noticed a consistent trend that the brightness and hue values for Zelda BOTW's dusk and sunset screenshots are lower than that of Genshin Impact. This thus provides the possibility of an alternate argument that Genshin Impact adopts a different art style as compared to Zelda BOTW as Genshin Impact picks a brighter palette and a brighter hue.

Next, we decided to use ImagePlot to plot all the different elements onto a single plot.

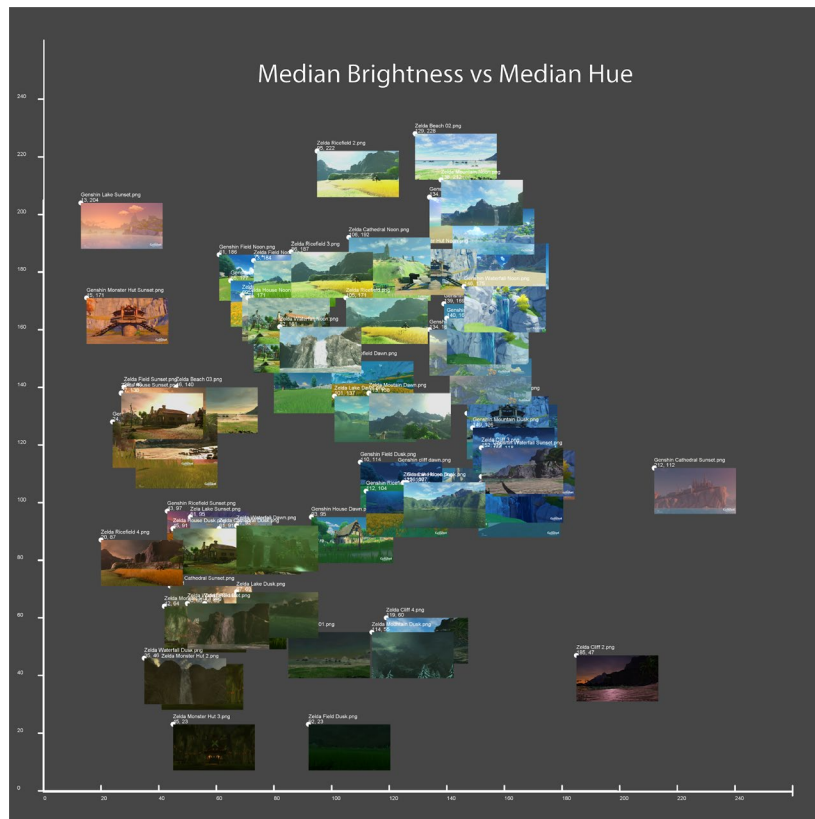


Figure 10: ImagePlot of all 74 different elements.

After plotting all 74 different elements onto a single ImagePlot (Figure 10), we realise that screenshots from *The Legend of Zelda: Breath of the Wild* are more widely distributed across the median brightness (vertical) axis. Whereas for *Genshin Impact* it has a wider range of hue colours (horizontal axis). *Genshin Impact* seems to adopt a brighter palette in their game, this is evident in the higher brightness medium cluster observed in the plot. The 'darkest' screenshot observed in the *Genshin Impact* screenshot has a medium brightness of 95 which is still larger as compared to the *Zelda BOTW* screenshot which has a cluster near the bottom left side of the plot which corresponds to low brightness and hue.

Following this, we generated another single ImagePlot of all the elements in the games *Genshin Impact* and *Zelda BOTW*, but with the addition of in-game elements from other open-world RPG games (*Skyrim*, *Minecraft*, *Firewatch*, *Just Cause 3*), to obtain a collated overall plot (Figure 11).

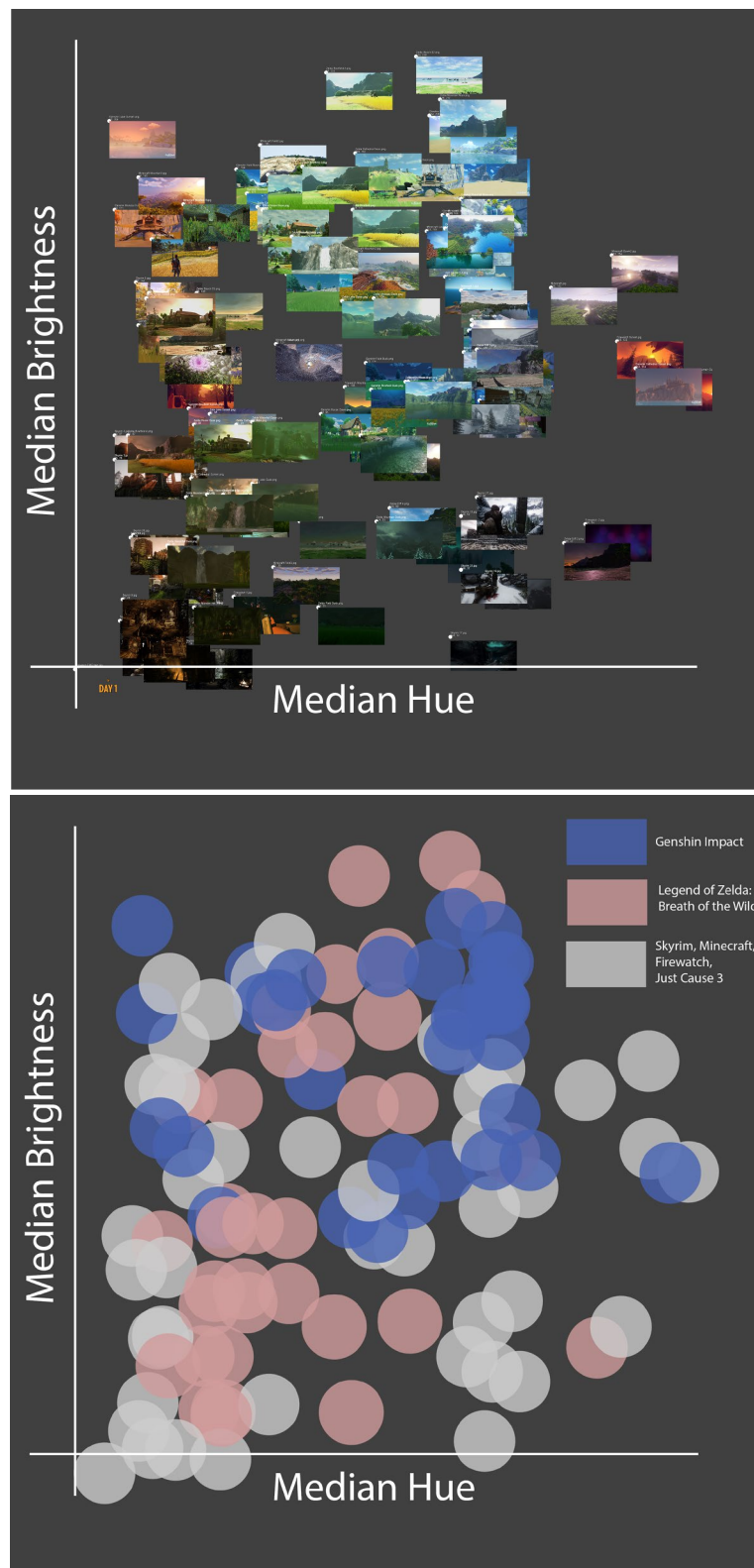


Figure 11: Final collated overall result of ImagePlot for all elements.

As seen from the final overall result, we could hypothesize that there is no significant similarity between BOTW's and Genshin Impact's art styles. They do form some clusters, perhaps indicating that BOTW's art style is darker in tone compared to Genshin Impact's art style. As seen by the sprinkling of plot points of screenshots of other open-world games across

the canvas, there are no obvious dissimilarities that could be inferred between both Genshin Impact and BOTW's art style as compared to other open-world action-adventure/action-RPG games.

Limitations

This study is definitely not without its limitations. One very obvious limitation would be that comparing only the audio and visual aspects of video games to determine their degree of similarity is a relatively narrow perspective. The interactive experience provided by video games certainly could not be boiled down to only its audiovisual components. Even if we were to break down a video game to its basic components (such as its characters, its story, its source code, as well as its audiovisual assets), a gaming experience is definitely greater than the sum of its parts.[10] The reason we conducted analysis on just the audiovisual aspects is because these two are the most disputed components between Genshin Impact and Zelda BOTW in terms of their high degree of similarity. These two are also the only components being protected under the copyright law that do not clearly differ between the two aforementioned games (unlike the story and the characters, of which the differences between Genshin Impact's and Zelda BOTW's are definitely obvious even to the layman). Since we do not have access to each video game's proprietary source code, we figured that that line of comparison would be unfeasible for the purposes of our research as well.

Musicology

With respect to our auditory analysis, while we did employ control variables to ensure that the results of this analysis are relatively reliable, this does not imply that our analysis is foolproof. "Reducing" a musical piece to its spectrogram representation is relatively accurate and reliable, however, the method by which we measure the cross-correlation might be flawed. For instance, we chose an arbitrary threshold of 0.5 to indicate whether there is a match or not. A threshold of 0.5 might not imply that there is more than 50% of degree of similarity in a relative scale between Genshin Impact and Zelda BOTW. Since most musical pieces crafted in the world would usually have commonly used tones, beats or amount-of-silence enjoyed by the general public, this might skew the results in favor of the two musical pieces being similar, anyway. Thus, a high degree of cross-correlation might not even indicate that the two musical pieces are similar; they are simply highly cross-correlated. The inherent bias of the types of music would be considered enjoyable by video game players or the general public could indirectly influence the degree of cross-correlation between two musical pieces, instead of isolating the singular cause that Zelda BOTW influenced the creation of Genshin Impact in a significant way.

Artistic Stylization

Another form of limitation would be that certain visual elements embedded within each game's screenshots might not actually represent the game itself. For example, the Genshin Impact screenshots are watermarked by default whenever we take a screenshot using the in-game tool. This might affect the results since those screenshots from Genshin Impact have a common similar watermark at their bottom-right corner section. As for Zelda BOTW, since there is no in-game tool to take screenshots, we had to resort to using "mods" to remove certain elements of the game's HUD (head-up display)³ to allow us to take clean screenshots within the game.[11] Since we attempted to take a fair comparison between the two games' screenshots by standardizing their resolution to 1080p and their pixel density to 150-160ppi, we took the screenshots of Zelda BOTW on a desktop computer machine. However, since there are no versions of Zelda BOTW available for a PC, we needed to resort to using emulators instead.[12] For these emulators to work properly (i.e., for Zelda BOTW to be playable on a PC), they need to be equipped with certain configurations and settings enabled by various "mods" provided by the gaming community. As a result, these "mods" might have changed the overall tint, hue or saturation of the Zelda BOTW screenshots. These "mods" do not originate from the game itself (they are merely forms of enhancement and modifications), and as such, might not accurately represent the original art style that the creators of Zelda BOTW were trying to portray. This might have affected the final result, since the two games' respective art styles might have been slightly misrepresented by the screenshots that we have taken simply because of the methods we used to take the screenshots.

Our selection of open-world games might also be biased since the open-world games that we have chosen are more nature-based. This is because we attempted to see whether there is a significant difference between other open-world games with plenty of nature-based landscapes and sceneries as compared to Genshin Impact and Zelda BOTW. As such, our dataset of screenshots of other open-world games definitely does not fully represent every single available open-world game out there.

Areas of Improvement

Given that stylometry analysis in video games is still a relatively novel topic under the Digital Humanities, and that the video games chosen like Genshin Impact is relatively new, there is a lack of datasets available online. Hence, we had to resort to manual collection of data

³ BOTW provides on-screen feedback to the player by using a head-up display, which displays certain information such as the player's current health, the special "skills" currently available for usage by the player, the current in-game time and weather, the game's mini-map to show the player's whereabouts, etc. Some (but not all) of the elements are removable by switching to a "Pro" HUD instead of a "Normal" HUD. The remaining persistent elements of the HUD could be removed using mods. The mod that we utilized for this research is the ProHud3000 mod

ourselves. This is a very time-consuming process and hence limited our size of the dataset, hence leading to a few areas of improvement we could have for the project.

Firstly, we would retrieve a larger dataset of more in-game screenshots and audio resources for a more accurate comparison and analysis of the stylometry similarities and dissimilarities. This would include a greater variation in scene location and game time. More screenshots of other open-world games could be collected as well, since we could only gather online datasets of such screenshots, which might be biased in nature.

Given the larger dataset, we would also focus on a deeper analysis of the dissimilarity of the two games from other open world RPG games as well. Our current methodology merely made a brief overall comparison between the two games and other open world RPG games, which gives us a glimpse of the actual comparison. These new datasets will be processed via the same methodology to obtain visual data for analysis. We can then only conclude that Genshin Impact is influenced by BOTW if the areas of similarities are very dissimilar to the other open world RPG games. If Genshin Impact, BOTW and the other open world RPG games share the same similarities, then we may conclude that it is a common feature of open world RPG games, and not a copy of BOTW.

Thirdly, instead of plotting median brightness against median hue or median saturation, we could improve on the results by utilizing Principal Component Analysis (PCA) as suggested by the ImagePlot documentation, which indicates that PCA would produce a more precise plot. Another suggestion would be to analyze the summed z-projection of multiple screenshots of each game.[13]

Our conclusion of BOTW's art style being generally darker than Genshin Impact might also be solely influenced by a random coincidence of us gathering more dusk/dawn/night screenshots of BOTW than Genshin Impact. Even though we attempted to gather the screenshots with as random time intervals as we could, the bias might still be inherent. A possible reason might be due to overcompensation, since BOTW spawns more enemies more frequently at night compared to Genshin Impact, leading to a subtle psychological effect on our researchers which might lead to them trying to take more screenshots at dusk/dawn/night in BOTW. A larger dataset of screenshots would solve this probable issue.

Last but not least, we could employ better algorithms to compare the audio resources, as well as more dataset to compare with other video games. While utilizing Fourier Transform and comparing audio on their frequency domain and using their spectrograms instead of their time domain is already an improvement, we could always combine this with other techniques such as the extraction of the audio's mel-frequency cepstral coefficients (MFCC, i.e., spectrum-of-a-spectrum) and obtaining the normalized Euclidean distance between two audio's MFCCs in order to achieve a more accurate result.

Lessons Learnt

Through conducting this project, we learnt that analyzing images and audio files are not as easy as we first thought. Comparisons should be done with a common and mutually understandable basis of comparison so that the comparisons could be done in a fair manner. However, it is relatively difficult to find this common comparison point in the first place. Many researchers have come up with multiple bases of comparisons, benchmarks, and sophisticated algorithms to compare images and music, but they are not the de-facto industry standard that is agreed upon by everyone. When combined with our context of comparing two video games, the analysis becomes more complex. We just chose a selected few of the common points that we can compare between the two video games and we conducted our research based on those common lines of comparison.

Conclusion

In conclusion, from our results, we could simply hypothesize that Genshin Impact was at least influenced by BOTW to some degree. Nevertheless, Genshin Impact does have its unique style, even in its visual art, as well as its musical elements. Even though a video game's art and music could not wholly represent a video game as a creative work, we could see that some level of inspiration was derived by Genshin Impact from BOTW, even if it might not have crossed legal and ethical lines. This, in and of itself, was actually admitted by one of Genshin Impact's developers.[14]

Truth be told, this field of the digital humanities is still rapidly evolving. Applying digital humanities tools to video games is a relatively new concept. Nevertheless, we hope that we could inspire more researchers to delve deeper into the field of video games. Video games are definitely a new form of culture where people can derive satisfaction and meaning from. There is anecdotal evidence that video games saved people from suicide, helped people in fighting depression, and many other such inspiring stories.[15][16] Practically speaking, the video game industry contributes quite a significant amount to the capitalistic economies of the world. As such, its cultural and economic influence should not be grossly ignored, especially if some games attempt to just clone other games. We hope that more digital humanists would be inspired to conduct research on video games, so that we could hopefully obtain greater and better understanding in this field.

References

- [1] Chapple, C. (2020, Dec 1). *Genshin Impact Generates Close To \$400 Million in First Two Months, Averaging More Than \$6 Million a Day*.
<https://sensortower.com/blog/genshin-impact-first-two-months-revenue>
- [2] *Apple presents App Store Best of 2020 winners*. (2020, Dec 1).
<https://www.apple.com/newsroom/2020/12/apple-presents-app-store-best-of-2020-winners/>
- [3] *Best Game of 2020*. (2020, Dec 1).
https://play.google.com/store/apps/topic?id=campaign_editorial_bestof2020_bestgame&hl=en&gl=US
- [4] Dizon, Q. (2019, Jul 26). *A Data Scientist's Approach to Visual Audio Comparison*.
<https://towardsdatascience.com/a-data-scientists-approach-to-visual-audio-comparison-fa15a5d3dcef>
- [5] Iantorno, M. (2020). *GameSound, Quantitative Games Analysis, and the Digital Humanities*. *Digital Studies/le Champ Numérique*, 10(1), 2. DOI:
<http://doi.org/10.16995/dscn.319>
- [6] Mejeur, C. (2020, Dec 1). *Playing with Playthroughs: Distance Visualization and Narrative Form in Video Games*. *Digital Humanities Quarterly*, 14(3).
<http://www.digitalhumanities.org/dhq/vol/14/3/000486/000486.html>
- [7] Lalinsky, L. (2011, Jan 18). *How does Chromaprint work?*
<https://oxygene.sk/2011/01/how-does-chromaprint-work/>
- [8] *Comparing Non-Identical Audio Files for Duplicate Content with Cross-Correlated Fingerprints*. (2013, May 5). http://www.randombytes.org/audio_comparison.html

- [9] Aggarwal, S. (2017, Mar 20). *Audio signals: Comparison*. Medium.
<https://medium.com/@shivama205/audio-signals-comparison-23e431ed2207>
- [10] Corbett, S. (2016, Aug). Videogames and their clones – How copyright law might address the problem. *Computer Law & Security Review*, 32(4), 615-622.
<https://doi.org/10.1016/j.clsr.2016.05.001>
- [11] (n.d.). ProHud3000 and No Master Mode Triforce. <https://gamebanana.com/guis/34063>
- [12] (n.d.). Cemu. <https://cemu.info/>
- [13] Ferguson, K. L. (2017). Digital Surrealism: Visualizing Walt Disney Animation Studios. *Digital Humanities Quarterly*, 11(1).
<http://www.digitalhumanities.org/dhq/vol/11/1/000276/000276.html>
- [14] *Genshin Impact Exclusive Interview: Breath of the Wild controversy, Xbox and PvP clarifications, and more.* (2020, Sep 25). FreeMMOStation.
<https://www.freemmostation.com/features/genshin-impact-exclusive-interview-breath-wild-controversy-switch-xbox-pvp/>
- [15] *Happy Birthday Undertale, the Game that Saved Me from Suicide.* (2016). Reddit.
https://www.reddit.com/r/Undertale/comments/52zuou/happy_birthday_undertale_the_game_that_saved_me/
- [16] *Switch has helped me to improve my mood and fight depression.* (2019). Reddit.
https://www.reddit.com/r/NintendoSwitch/comments/ajidau/switch_has_helped_me_to_improve_my_mood_and_fight/

Other References

Bailey, J. (2019, Aug 12). *The Breath of the Wild Plagiarism Battle*. Plagiarism Today.

<https://www.plagiarismtoday.com/2019/08/12/the-breath-of-the-wild-plagiarism-battle/>

Bankhurst, A. (2019, Aug 6). *Chinese Zelda Fans Protest Alleged The Legend of Zelda:*

Breath of the Wild Rip-Off Genshin Impact. IGN.

<https://www.ign.com/articles/2019/08/05/chinese-zelda-fans-protest-alleged-the-legend-of-zelda-breath-of-the-wild-rip-off-genshin-impact>

Copyright of video games. (n.d.). Wikipedia.

https://en.wikipedia.org/wiki/Copyright_of_video_games

Craddock, R. (2019, Aug 5). *Random: Zelda Fan Smashes PS4 In Rage As Breath Of The*

Wild 'Clone' Genshin Impact Is Revealed. Nintendo Life.

https://www.nintendolife.com/news/2019/08/random_zelda_fan_smashes_ps4_in_rage_as_breath_of_the_wild_clone_genshin_impact_is_revealed

Doolan, L. (2020, Sep 26). *Genshin Impact Dev Responds To Breath Of The Wild Clone*

Comments, Insists It's A "Very Different" Experience. Nintendo Life.

https://www.nintendolife.com/news/2020/09/genshin_impact_dev_responds_to_breath_of_the_wild_clone_comments_insists_its_a_very_different_experience

Gordon, R. (2018, Jul 14). *The Most Controversial Video Game Lawsuits*.

<https://screenrant.com/controversial-video-game-lawsuits/>

Kim, S. (2018, Jun 27). *Copyright Lawsuit Dropped Against Fortnite Creators, Ending*

Legal Battle. Bloomberg. <https://www.bloomberg.com/news/articles/2018-06-27/pubg-drops-lawsuit-against-creators-of-gaming-phenom-fortnite>

Minor, J. (2019, Aug 7). *These Games Seem Suspiciously Similar to The Legend of Zelda: Breath of the Wild*. PCMag. <https://www.pcmag.com/news/these-games-seem-suspiciously-similar-to-the-legend-of-zelda-breath-of>

Sackman, J. (n.d.). *11 Video Games That Resulted in Major Lawsuits*. <https://www.goliath.com/gaming/11-video-games-that-resulted-in-major-lawsuits/>

Sheridan, C. (2017, Sep 22). *The PUBG devs are calling out Fortnite Battle Royale as a clone - this could get messy*. Gamesradar. <https://www.gamesradar.com/the-pubg-devs-are-calling-out-fortnite-battle-royale-as-a-clone-this-could-get-messy/>

Tassi, P. (2020, Sep 30). *'Genshin Impact' Surpasses 'Breath Of The Wild' In One Major Way*. Forbes. <https://www.forbes.com/sites/paultassi/2020/09/30/genshin-impact-surpasses-breath-of-the-wild-in-one-major-way>

Video games: notable lawsuits of 2018 and 2019. Part One. (2019, Oct 25). Game World Observer. <https://gameworldobserver.com/2019/10/25/video-games-lawsuits/>

Wharton, R. (2013). Digital Humanities, Copyright Law, and the Literary. *Digital Humanities Quarterly*, 7(1). <http://www.digitalhumanities.org/dhq/vol/7/1/000147/000147.html>