

AI reads Playboy (but not for the articles): Revealing Cover Trends with Deep Neural Networks



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Abstract

Playboy has gathered attention throughout its history for the wide net it casts - it has had its foot in everything from politics to technology to art. No one yet has looked into the history of Playboy through a data analytical lens. In this project, I use tools from the Digital Humanities to zoom out and look at the big picture of a playboy. I used a deep neural network called DeepFace to analyze the facial attributes (age, race, gender, and emotion) of all the cover models. I am looking at this data in a time series to see how these characteristics have changed from 1953-2020. I was curious to look at this data in the context of circulation rates of Playboy, major historical moments in the sexual revolution (like The Pill, Title VII, etc.), feminism (Second-wave feminism, Equal Pay Act, Civil Rights Act), and advancements in technology (VCR, CD, online Porn).

As a secondary investigation, I also provide metrics for the deep neural network DeepFace. To do this I manually went through all the images DeepFace detected as having a face, and got the data by hand. I found patterns of when DeepFace misattributed the face and have quantitative results of how successful the model was.

Introduction

The iconic Playboy magazine began circulation in 1953 in Chicago, at a time when sexual repression was high and women's rights were low. The magazine ceased production in the Spring of 2020, but the empire's legacy, cultural impact, and archives live on. Playboy is nearly 70 years old, time has significantly taken its toll on the magazine. Understandably, Playboy is often and easily dismissed as an exploitative, damaging cultural piece that panders to the male gaze and eagerly objectifies women. Looking at it in the context of 2022, it is an incredibly problematic magazine where men can read interesting articles and look at pretty women like they are accessories. However, upon further examination, it becomes clear that Playboy lives in somewhere between the boxes of "good" and bad". The sexual politics of Playboy and its founder Hugh Hefner are more complex than most people realize.

The description of Playboy magazine as progressive might seem backward. To truly understand the cultural impact of Playboy we must look at it from a historical lens. Playboy Magazine was Hefner's attempt to make a magazine for the "modern man". Combining nude and sexual images of women with high-brow interests like jazz, fiction, progressive politics, and interviews made playboy stand out as a classy magazine. The 1950s were a time when sex was suppressed, shamed, and not discussed - the circulation of this type of magazine was quite progressive at the time. This new endeavor began with \$8,000. Hefner had purchased a pre-stardom photo of Marilyn Monroe for \$500 and used her as the first cover model; It flew off the shelves. It is clear that most of the appeal of Playboy was the sex factor, especially the inclusion of the Playmate centerfold. This centerfold was in the middle of the magazine and was a two paged nude image of the monthly playmate.

The sexism in Playboy is clear: the magazine exploits young women for Hefner's own sexual and financial gain; Playboy prioritizes mostly white heterosexual male power. It can be seen as progressive because it is giving women liberation from the conservative domestic assumption of life. It gives visibility to female sexuality. But if a man creates female sexual empowerment is it really sexual empowerment? Sex magazines at the time like Penthouse (1965) and Mayfair (1965) were hardcore porn magazines. These magazines were degrading and shaming towards the women. Given no names, these women were solely seen as objects of sex. Hefner had a strong focus on making Playboy high-brow. He wanted to humanize the women and make it clear that these models are in the same world as the reader. There was a strong emphasis on the "girl next door" trope. This is more prevalent in the height of Playboy (1950s - late 1970s). The "good girl" trope in Playboy subverts the post-WWII cultural understanding that a good woman is one that conceals her sexuality. Playboy may have given the women more power over their sexuality and individuality, however, the magazine sets up a dynamic in which the women are only as valuable as their sexual attractiveness to men.

There is no doubt that Playboy magazine is riddled with sexism, especially in the 50s and 60s, however, Hefner did create a freer, more open version of heterosexuality. This was quite progressive and cutting-edge at the time. The 1960s was the beginning of the sexual revolution and second-wave feminism, during this time Playboy began to take on a new meaning. After the 70s, America slowly embraced changes that came up through the sexual revolution and feminism. As this began, the idea that "the 'good girl' could enjoy sex" was no longer super cutting edge and powerful. After the late 70s, the centerfold and general magazine was less future-forward and more of a flashback to sexist times. Regardless of valence, Hefner and Playboy shifted the conversation about feminine sexuality and was a powerful cultural influence in America.

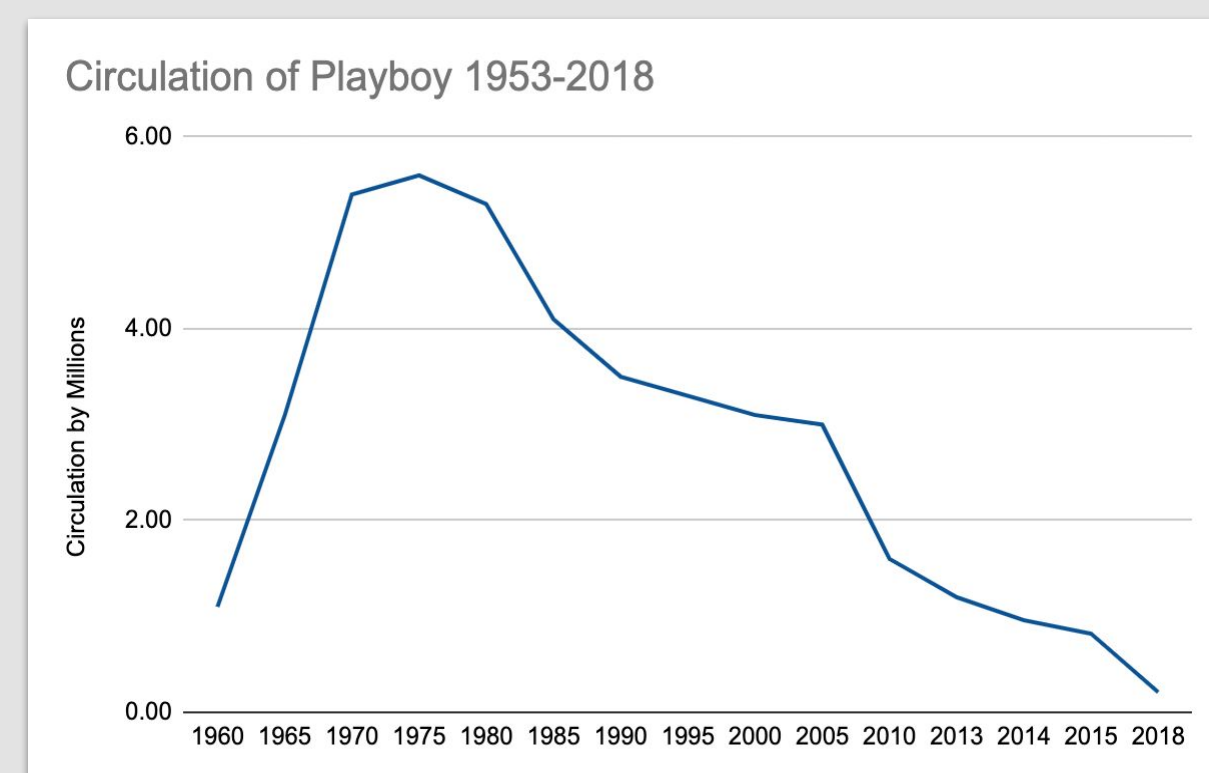
Method

Computational techniques were applied to analyze the visual culture of Playboy Magazine on a large scale. This project is based on the theory of distant viewing - a methodological structure of studying a large corpus of visual materials. Playboy was examined because of its cultural importance in US society. It was also an interesting area of study because it is a media that has not been extensively examined in the academic setting. The source material was collected from Playboy archives. This project uses the deep neural network model, DeepFace to get semantic elements from the covers. Deep Neural networks work like a human brain - with connections and weights they can process data in complex ways. DeepFace is a network used for facial recognition and facial attribution analysis (age, gender, race, and emotion). It is a hybrid facial recognition model that is a blend of many of the best image recognition tools; However, it had many downfalls.

With the help of Professor Chun, DeepFace was able to process the 800 images of Playboy Covers. Of the 800, DeepFace could only detect faces in 489 covers. Due to this inaccuracy, a secondary research question was created: how accurate is DeepFace? To measure the accuracy, the 489 covers were analyzed by a human. Having the human in the loop provided an understanding of the downfalls of DeepFace.

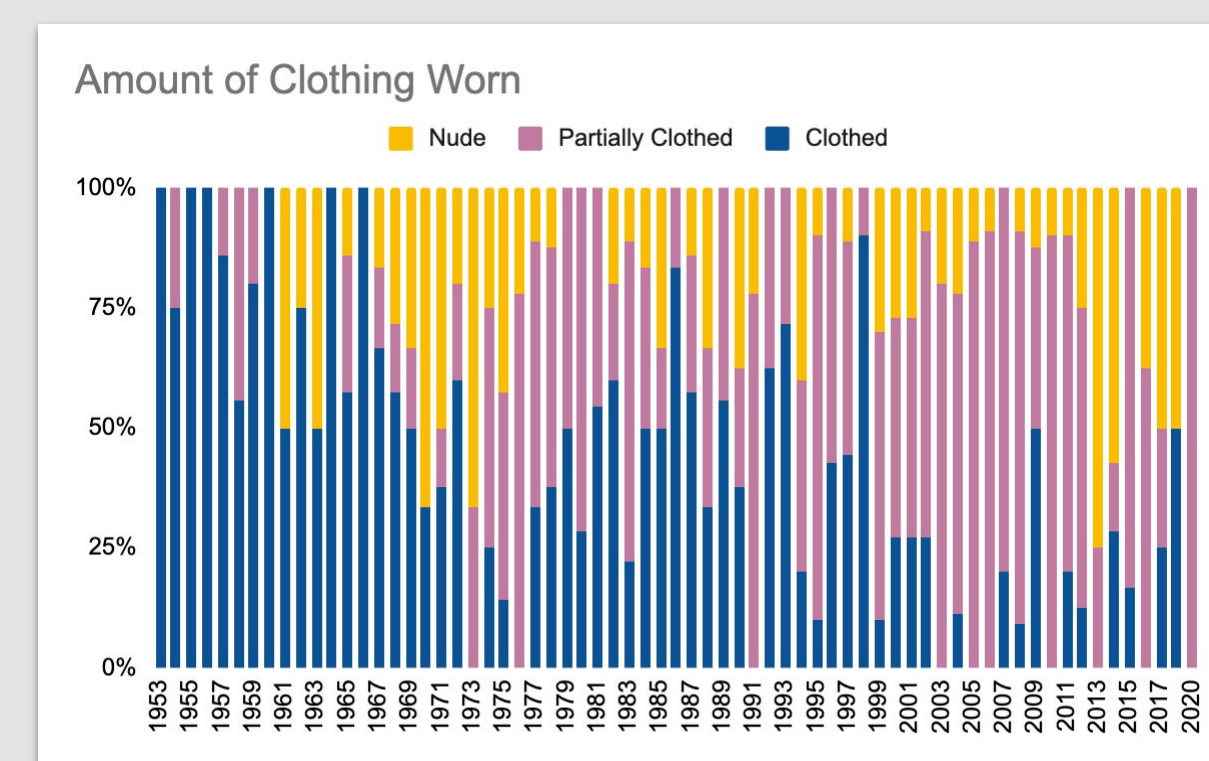
Results

Playboy Circulation:



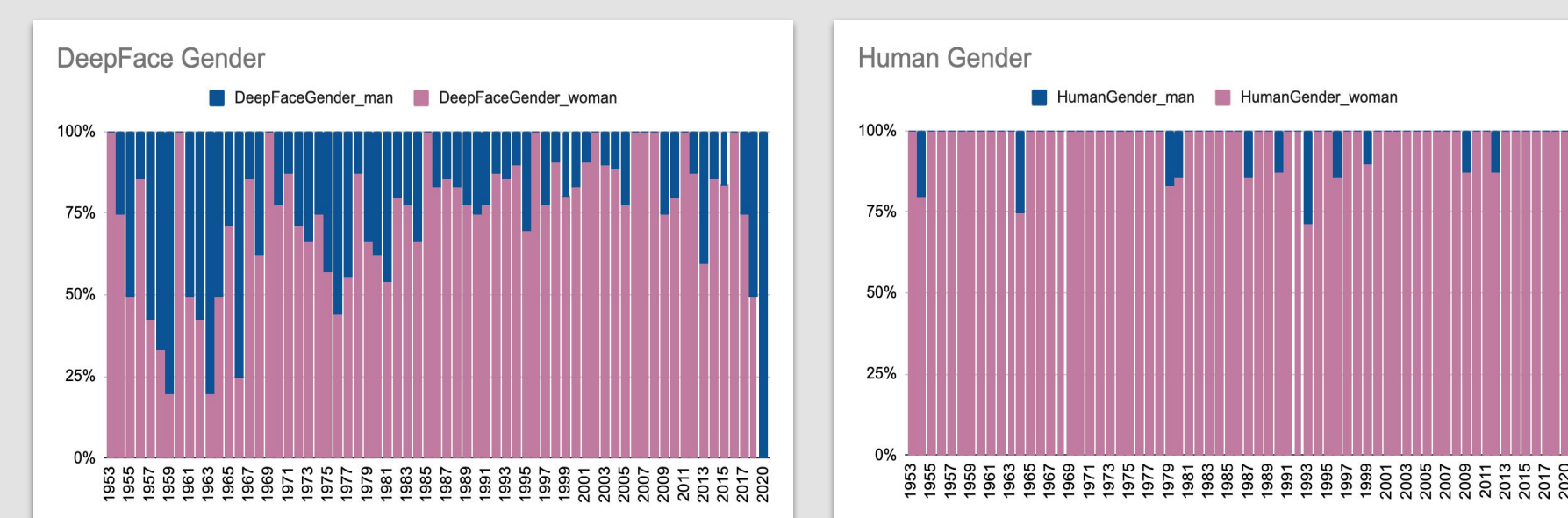
The height of Playboy's average circulation rate was from 1950-1970s, peaking in 1975 at an average 5.6 million copies per month. This was the time that Playboy went from a magazine into a pop culture empire. The best-selling issue was the November 1972 edition selling 7 million copies.

Nudity of the Covers:



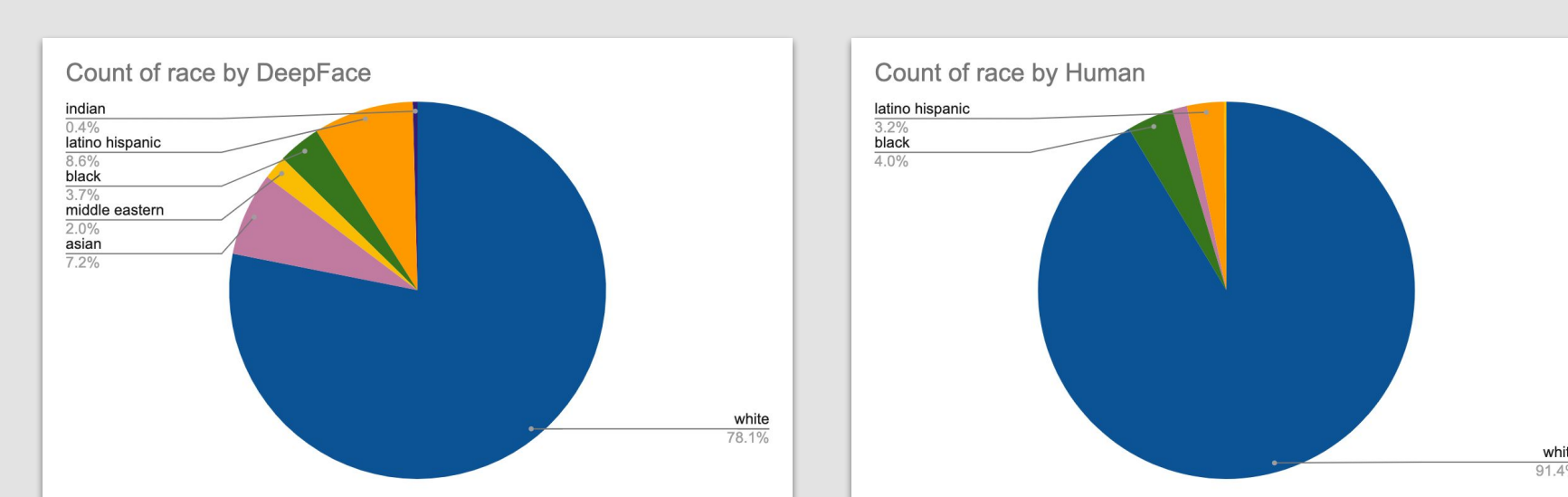
The figure above shows the amount of clothing worn by the cover model. In the early stages of Playboy from the 1950s through 1960s the cover models were more clothed than not. As circulation rose and we entered the 70s, the amount of clothing that was worn decreased. The early 70s was the peak in circulation, this was also one of the peaks in nudity of the models. As the 2000s are entered almost none of the covers are fully clothed. Most are either partially clothed or nude.

DeepFace's Ability to Detect Gender:



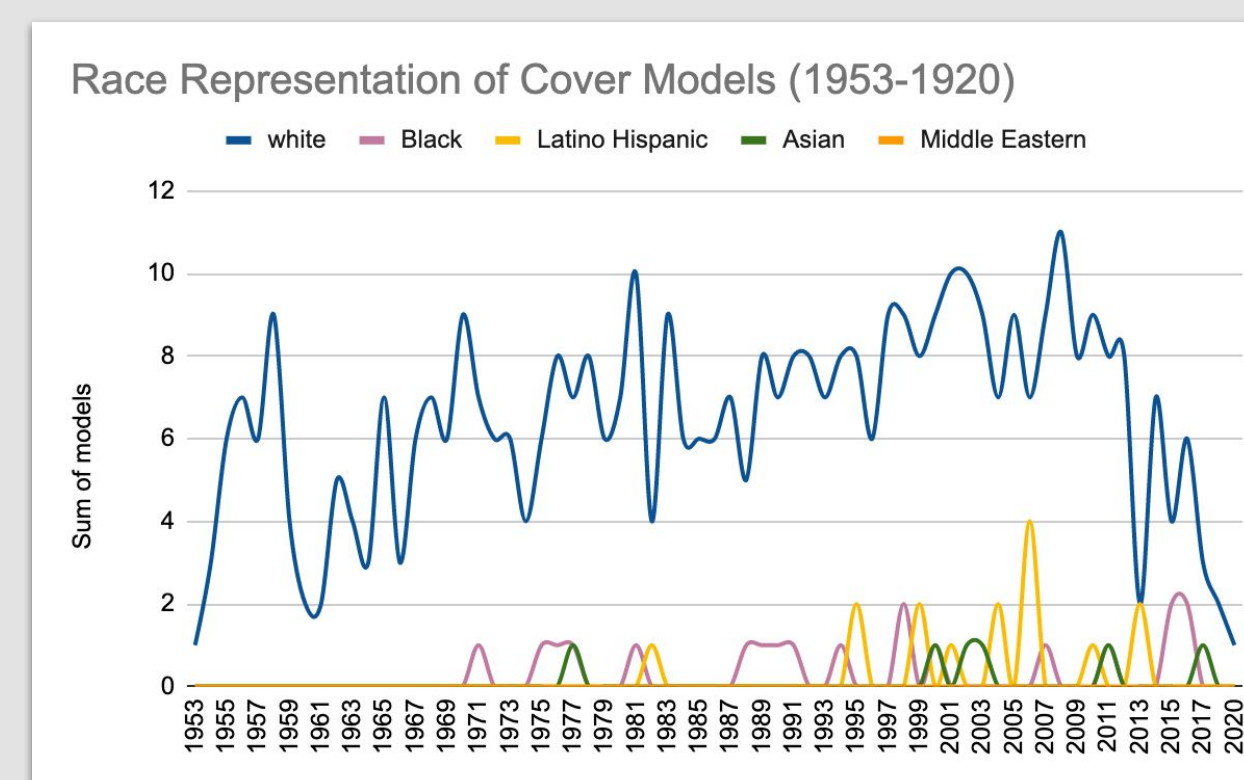
DeepFace had difficulty distinguishing between men and women. As shown above DeepFace detected more men than there actually were. Most of the cases in which DeepFace incorrectly identified the model as male was when the woman had bangs, covered forehead or short hair.

DeepFace's Ability to Detect Race:



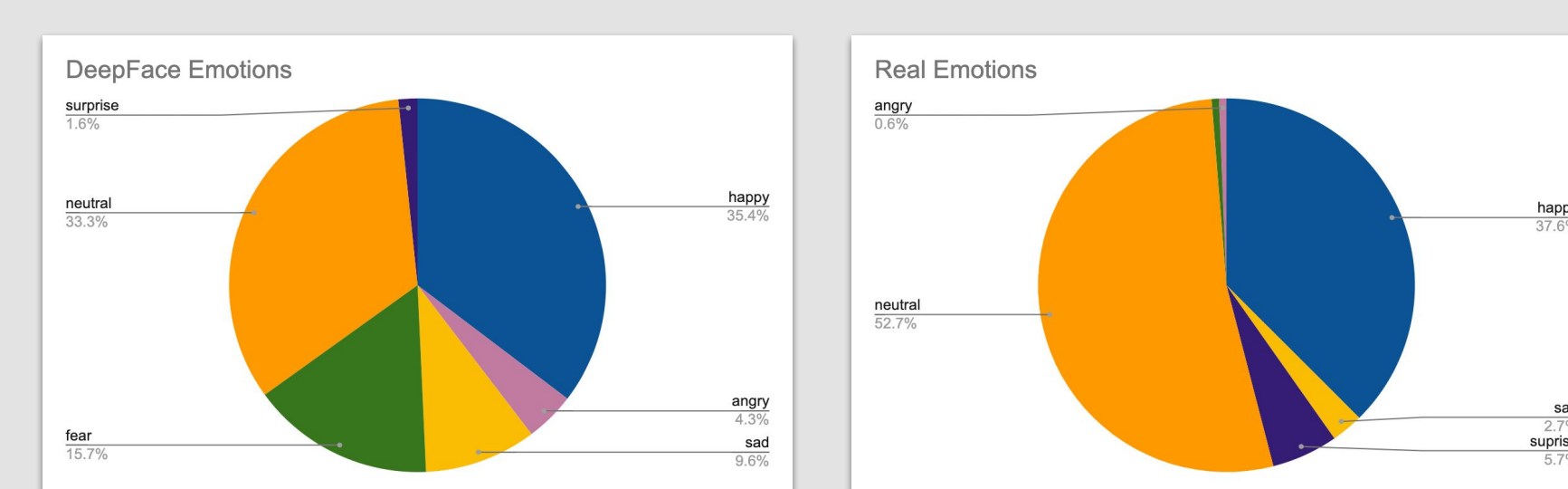
The two pie graphs above show the inaccuracy of DeepFace in detecting race. It appropriately detected that the majority of models were white, however, the model did detect a much more diverse representation of race. Many of the errors could be due to dark lighting of the models in many of the covers along with heavy use of artificial tanner.

Representation of Race of Cover Models:



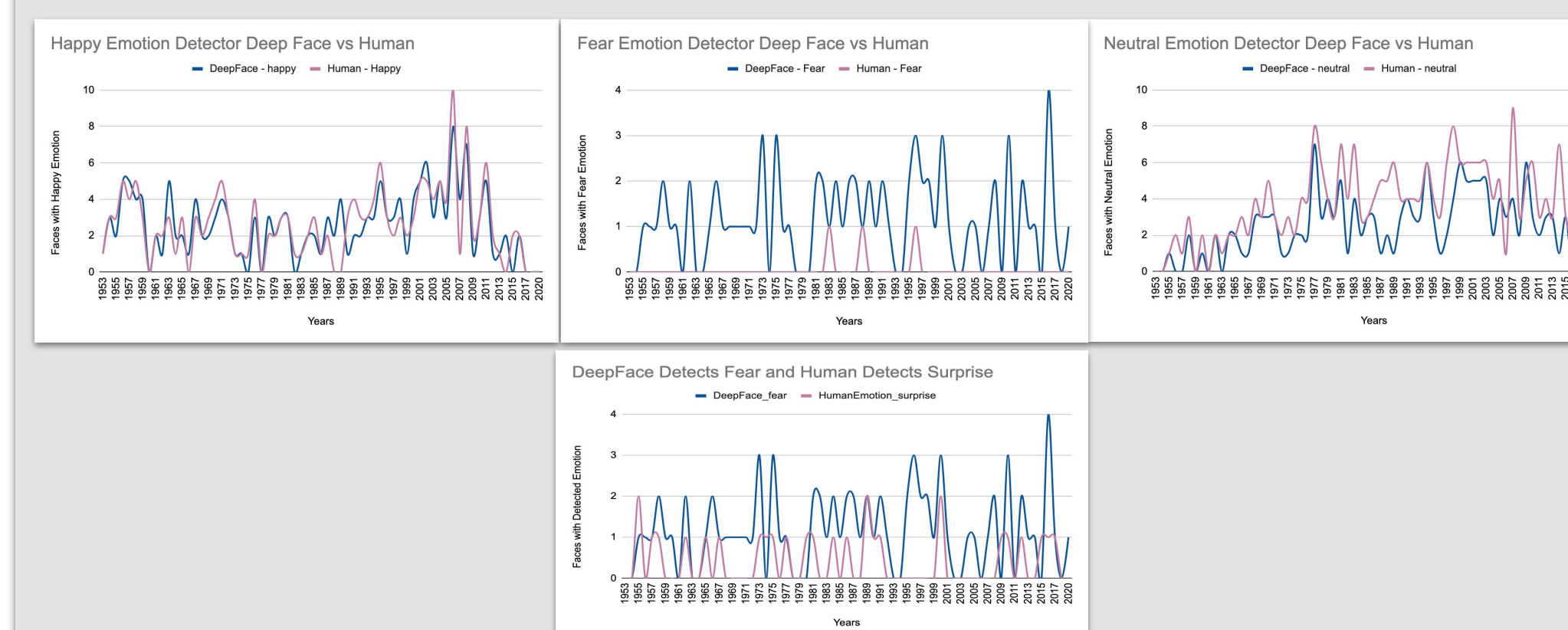
The graph above shows the representation of race of the cover models over time. The race was determined by human judgment and online information regarding the model's race. This was done because DeepFace was inaccurate in detecting race (shown in pie graphs above). Most of the cover models were white. The first model that was Black was in 1971, representation of black women increased slightly in the early 90s. Latinx/Hispanic models rose in representation during the early 2000s. There were very few Asian models, no Middle Eastern and no Indian models.

DeepFace's Ability to Detect Emotion:



The two pie graphs above show the inaccuracy of DeepFace in detecting emotion. It appropriately detected that the majority of models were happy and neutral, however, the model detected a larger proportion of fearful faces. The model misattributed the expression of surprise as the expression of fear. This could be due to raised eyebrows and open mouths. The model also typically detected faces as fearful when the woman was looking over her shoulder. This is a position that makes sense to represent fear as one checks behind them for something, but typically this was inaccurate.

DeepFace's Ability to Detect Happy, Neutral, Fear:



The Graphs above show the detection of the top 3 emotions: neutral, happy and fear. Happiness in the cover models was prevalent from the 1950s-1970s. In the late 1970s, neutral emotions were more frequent. Neutral emotions were typically sultry, sexual and serious. DeepFace detected Fear more frequently than it was occurring. DeepFace was detecting the emotion of surprise as the emotion of fear. In the graph above the correlation between Fear and Surprise is shown. Nearly every time a cover model's emotion is surprise DeepFace attributes it to Fear.

Conclusion

Playboy Magazine has grown alongside pivotal movements like women's rights, the rise of technology, civil rights, and the sexual revolution. Zooming out and examining the large corpus of Playboy covers allows trends and stories to be told. Social pressure from an evolving consumer is an explanation for trends in data. The increase in nudity parallels the rise of the sexual revolution and of the circulation rates of the magazine.

Another feature that follows the rise of the sexual revolution is the introduction of the natural sexual expression. For the beginning two decades of Playboy, the most common emotions of the cover models was happiness. The data follows history, in the 1950-1960s the provocative aspect of playboy was that the 'good girl' could be sexual. In 1963 the rise of a more neutral expression began and peaked in 1978. This serious-sexual expression was becoming more prevalent in Playboy as the feminist movement was picking up. The 60s were the times that second-wave feminism was beginning: The Pill, Equal Pay Act, and The Feminist Mystique were all introduced.

Playboy was never a diverse media platform, with 91% of cover models being white. Playboy may be progressive in its inclusion of sex in mainstream media but this does not trickle down to non-white women.

Today 40% of Playboy's revenue comes from China. It makes its money from the bunny logo. With nudity being free and easily accessible what is left of Playboy is what its strength always was, its cultural image, the fantasy. What lives through the logo is the representation of high class and progress.

Playboy is a facet in American culture and has been evolving for the past 70 years at the will of the male consumer. Playboy's evolution alongside American culture is evidence of the importance of understanding history through visual media. The interesting story that AI finds when it reads Playboy is not in the articles nor in the individual issues, but in the narrative that is told by hundreds of covers over decades of progress.



Acknowledgements

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<https://theconversation.com/ive-spent-years-looking-at-what-was-actually-in-playboy-and-it-wasnt-just-objectification-of-women-84935>.

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