OTESSA
PROCEEDINGS

Uncovering the Politics Behind Adobe Stock

Angelica Martinez Ochoa iD
University of Texas at Dallas

Correspondence:
Angelica Martinez Ochoa
University of Texas at Dallas, USA
Email: amm180028 at utdallas.edu

Abstract
This paper explores how the categorization of images and the searching methods in the Adobe Stock database are culturally situated practices; they are a form of politics, filled with questions about who gets to decide what images mean and what kinds of social and political work those representations perform. Understanding the politics behind artificial intelligence, machine learning, and deep learning systems matters now more than ever, as Adobe is already using these technologies across all their products.

Keywords: ethics of technology, politics of technology, ethics, artificial intelligence, classification systems, infrastructural design, Adobe Stock.

Introduction

Adobe Stock is an online service that provides designers and businesses with access to more than 100 million high-quality photos, videos, vectors, illustrations, templates, and 3D assets for creative projects. One of the most innovative technologies that Adobe Stock has recently added to its platform is Adobe Sensei. Adobe Sensei uses deep learning to speed up the process of finding content, so users can find the media that best match their needs instantaneously.

Users can now review suggested titles when typing in the search bar, and they can either accept, reject, or edit them. Adobe Sensei not only predicts what you are looking for but also understands what objects are in the image; even more, it can comprehend aesthetic quality, composition, color palette, and emotional concepts (such as happiness, joy, sadness, and more) behind the image.

Methodology

The theoretical framework used in this research is situated under Bowker and Star's (1999) work, where classification systems were found to be often sites of political and social struggles. Using the Apartheid as a case study, Bowker and Stark show that political and social agendas are often presented as purely technical, and they are difficult to see. As layers of classification systems become enfolded into a working infrastructure, the original political intervention becomes more and more firmly entrenched. In many cases, this leads to the naturalization of the political category through a process of convergence.

This research proposes the exploration of Adobe Stock by doing a systematic analysis of samples generated by the prompt of 34 queries that show similar biases across them and the study of the first 100 images for each query. For this work, four basic queries were selected: women, lesbian couple, gay male couple, and millennials. From the analysis of the four basic queries, three assumptions were found, and 30 more queries were prompted to explore the existence of similar biases and assumptions across queries. In total, 34 queries were analyzed. The last 30 were obtained from the suggested titles at the search bar generated by the Adobe algorithm in relation to the four basic queries.

At the image layer of the training set, like everywhere else, we find assumptions, politics, and world-views. The "most relevant" pictures can illustrate the most standard ways of thinking about a particular subject or social group. Let's start by typing "millennials" into the search bar. With the "relevance" filter applied in the left-hand menu, we find that 41 out of the first 100 most relevant pictures show a group of young adults taking selfies or staring fixated at their phones or other gadgets (see Figure 1); these pictures represent this generation's narcissistic obsession with their devices.

Let's try another query with the search term "woman." From the 100 images that appear on the first page of results, only one picture shows a plus-sized woman. The other 99 pictures show very thin women, none of whom is even a bit overweight. From the 103 women appearing on the first 100 images, 77 of them are white and only one of them is not smiling. To sum up, according to Adobe Sensei and Adobe Stock's first page results, 80% of women are white, and 99% are thin and happy. Or at least that is how the "most relevant" women are portrayed (see Figure 2).
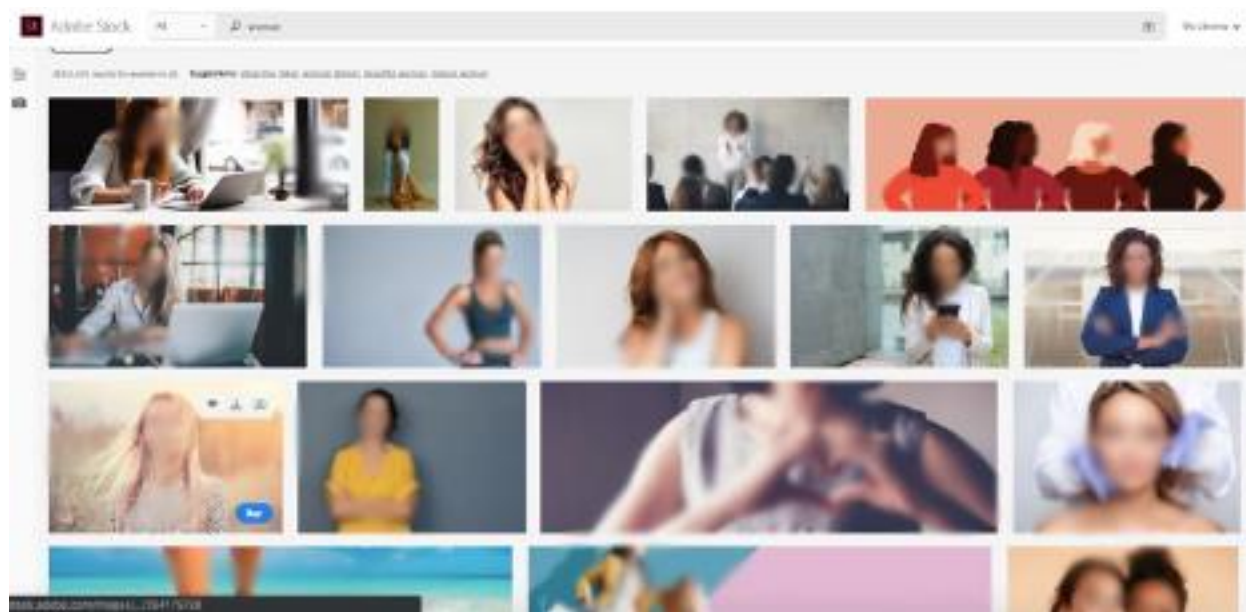
Figure 1

Screenshot From the Search Query "Millennials" (Adobe Stock, February 29, 2020)
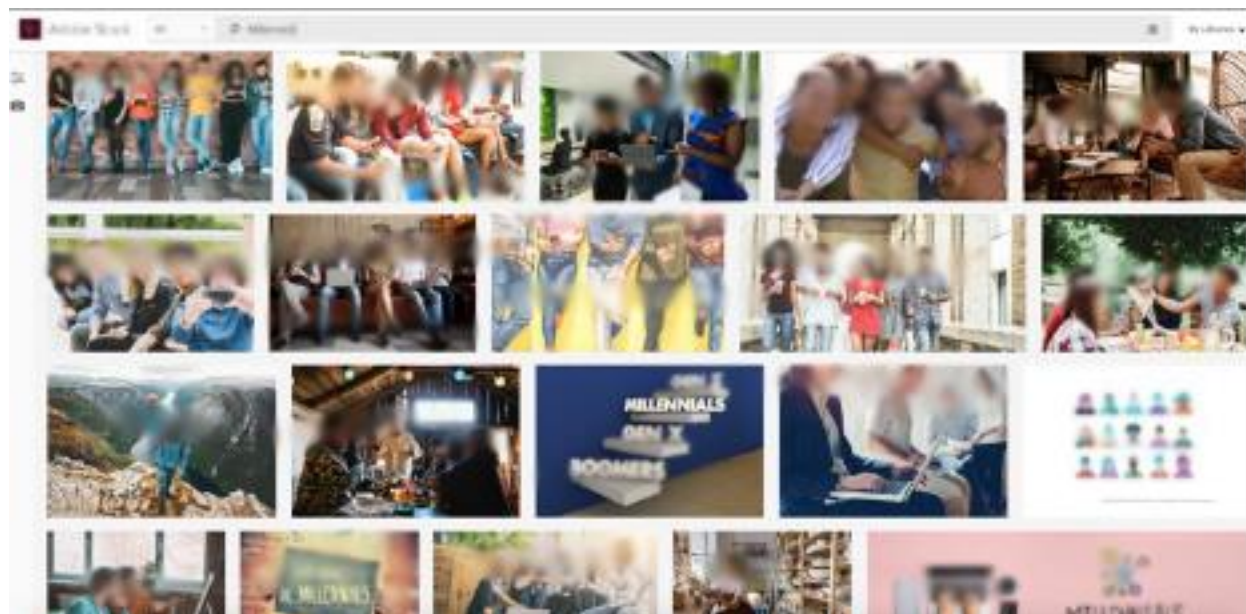
Note. Images have been blurred

Figure 2

Screenshot From the Search Query "Women" (Adobe Stock, February 29, 2020)
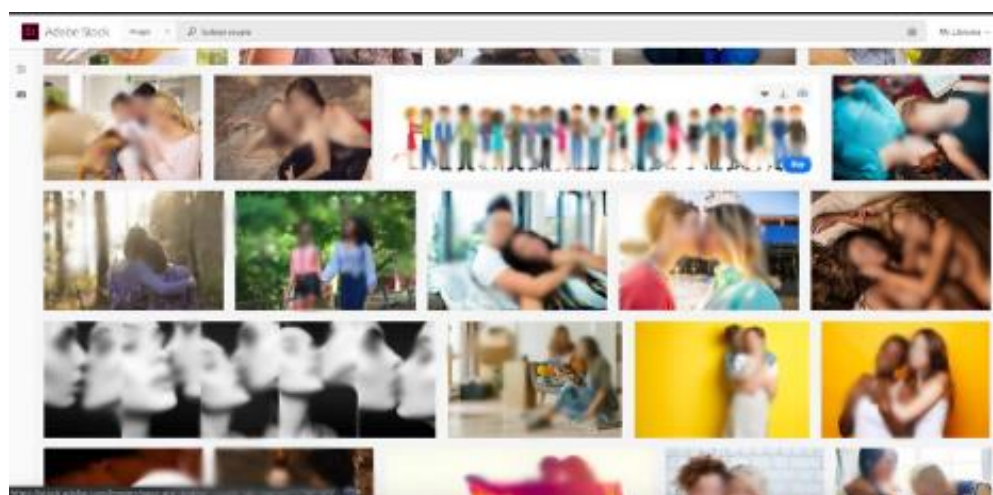

Note. Images have been blurred

Let's give it another shot. As I begin to type the word "lesbian," the search bar suggests for me the following titles: "lesbian couples," "lesbian wedding," "lesbian kiss," "lesbian love," and "lesbian family." Let's select "lesbian couples." The first page of results, containing 100 images, reveals that lesbian are more or less sexualized, as 9% of the images feature women who are naked or semi-naked (see Figure 3). This percentage does not differ much from the 11% percentage of sexualized and naked men who appear on the first page of results when one types "gay couple male" (see Figure 4). However, "lesbian couples" pictures present a higher percentage of sexualized labels with keywords like "sex" and "passion" when they are not even kissing, lying in bed, naked, or doing anything sexual (see Figure 5). For the ones who are in bed, but not naked or kissing, the keywords are "sexy," "hot," "passion," "naked," and "sex" (see Figure 6).
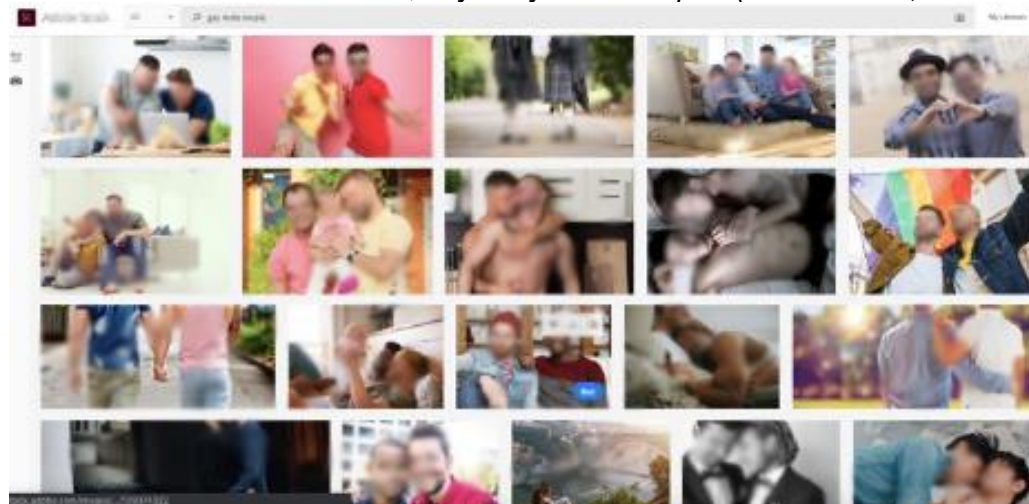
Figure 3

Screenshot From the Search Query "Lesbian Couple" (Adobe Stock, February 29, 2020)

Note. Images have been blurred
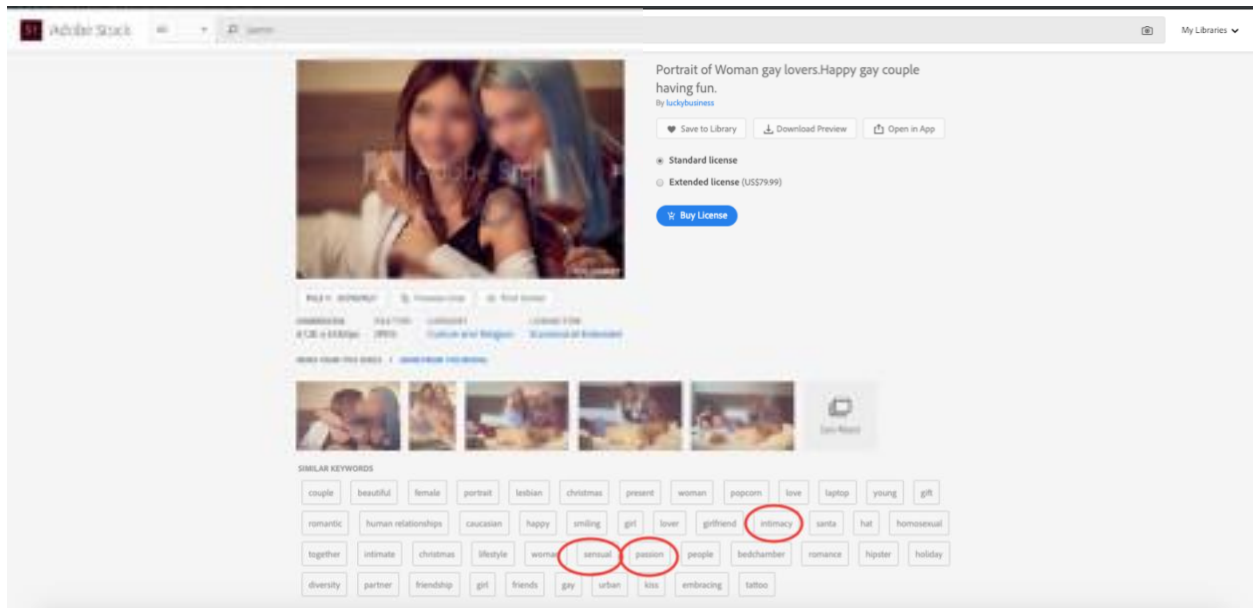
Figure 4

Screenshot From the Search Query "Gay Male Couple" (Adobe Stock, February 29, 2020)

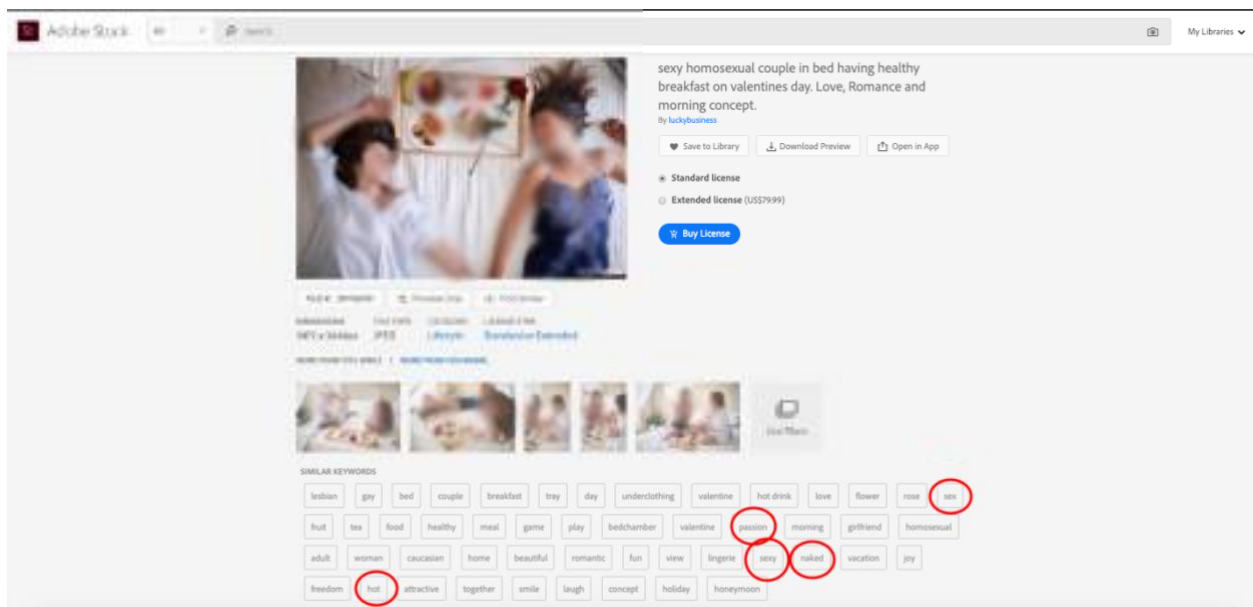*Note.* Images have been blurred

Figure 5

Screenshot of a Happy Romantic Lesbian Couple (Adobe Stock, February 29, 2020)

Note. Images have been blurred

Figure 6

Screenshot of a Lesbian Couple in Bed (Adobe Stock, February 29,2020)

Note. Images have been blurred

Similar Biases Across the Queries

From the queries above, the following social and political assumptions were found: 1) Millennials are obsessed with their devices, 2) Women are mostly thin and white, 3) Lesbian and gay male couples are equally sexualized. In order to explore if those assumptions and biases are presented in other queries, I run 30 more queries based on the first four (millennials, woman, lesbian couples, and gay male couple). For the assumption that millennials are obsessed with their devices, I found that there are a significant number of images representing the same social bias in other queries like millennials selfie, millennials at work, millennials home and other (see Table 1).

Table 1

Number of Images Found in Relation to the Assumption That Millennials are Obsessed with Their Devices.

Assumption 1: Millennials Are Obsessed with Their Devices

Queries	Number of images (out of 100) that represent millennials as obsessed with their devices.
Millennials	41
Millennial selfie	78
Millennials hanging out	13
Millennials having fun	13
Millennials travel	18
Millennials home	37
Millennials bar	21
Millennials working	66
Millennials at work	59
Millennials groups	42

Note. Queries were run on February 29, 2020.

Results for the assumption that lesbian and gay male couples are equally sexualized through images are presented in Table 2. While male gay couples showed a higher number of sexualized images, the difference is not significant, both lesbian and male gay couples are sexualized in about 5 to 11% of the first 100 images in queries related to their social relationships.

Table 2

Number of Images Found in Relation to the Assumption That Lesbian and Gay Male Couple are Equally Sexualized.

Assumption 2: Lesbian and Male Gay Couples Are Equally Sexualized.

Queries	Number of images (out of 100) that represent couples in bed naked/semi naked or are labeled with keywords like "sex," "sensual," or "sexuality."	
	Lesbian Couples	**Gay Male Couples**
Gay couple	5	8
Gay marriage	0	2
Lesbian couple	9	0
Gay pride	0	0
Gay wedding	0	0
Gay homosexuality	0	3
Homosexuality	1	0
Sexuality homosexuality	4	2
Pride homosexuality	1	0
Gay male couple	0	11
Total	20	26

Note. Queries were run on February 29, 2020.

The assumption that women are thin and white is the most constant through most of the queries about women. Oversized women are not represented in any of the queries; in average, 98.5% of the images showed thin women, and 60.8% showed white women only (see Table 3).

What are the Politics of Adobe Stock?

As the fields of information science and science and technology studies have long shown, all taxonomies or classificatory systems are political. The systematic analysis presented below shows how social biases are presented along with the queries; however, the search of images is not the only place where we can look at the politics of the platform.

Adobe Sensei has the political power to decide what category and keyword should be added to different images. For example, at the label level, the Adobe Stock conception of gender is as a simple binary structure, with "male" and "female" being the default choices. At that level, the assumption is also that someone's gender identity can be ascertained through a photograph. Even though users have the option to create and add their keywords or labels, Adobe Stock platform makes things "easier" by adding 25 keywords automatically and controls and monitors new

Table 3

Number of Images Found in Relation to the Assumption That Women are Thin and White

Assumption 3: Women are White and Thin

Queries	# <u>of</u> images (out of 100) that represent the assumption:	
	Women are Thin	**Women are Mostly White**
Woman	99	80
Entrepreneur women	97	46
Business women	98	42
Thinking woman	99	58
Lawyer woman	98	50
Meditation woman	99	50
Stress woman	100	70
Yoga woman	98	64
Beautiful women	100	74
Bikini woman	97	74
Average	98.5	60.8

Note. Queries were run on February 29, 2020.

keyword in its "review" process. Besides, the platform decides what images are more relevant, and by doing so, decides who and what matters the most.

If the user created the image with other Adobe products, things are even faster because Adobe Sensei is integrated into all Adobe products and gives the user auto-keywords even before uploading the keywords to Adobe Stock. Using keywords that are provided by Adobe Sensei gives the contributors more possibilities to make their images findable and, therefore, more chances to be sold. Auto-keywording gives Adobe Sensei the power to decide how to label people; this means that it gives the human developer (or developers) of the machine learning algorithm the power to label people according to their views of the world.

Why a Critical Analysis of Stock Photo Platforms Matters for Education?

The whole endeavor of collecting images, categorizing them, and labeling them is itself a form of politics. Students in the areas of design, media, or communication studies should be aware of the politics behind online stock photo providers using AI categorization systems to sort images. This awareness is essential as these students are learning to build media products such as advertising, information, and education materials for the public. Teachers can also benefit from this knowledge to help students identify and understand stereotypes that are created or reinforced by images that are frequently used in communication materials.

Open Researcher and Contributor Identifier (ORCID)

Angelica Martinez Ochoa https://orcid.org/0000-0001-7763-3568

References

Bowker, G. C., & Star, S. L. (1999). *Sorting things out: Classification and its consequences*.: The MIT Press.