

Algorithmic Nostalgia: How Machine Learning Curates Our Emotional Connections to the Past

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ABSTRACT

In an era increasingly shaped by algorithmically curated media environments, nostalgia has become a powerful emotional tool within digital platforms. This study investigates how algorithmic recommendation systems on Instagram and Twitter facilitate the emergence of nostalgia-themed content and influence users' emotional engagement. The analysis explores how brand-generated throwback posts, strategically crafted to evoke collective memory and sentiment, intersect with user interaction patterns and algorithmic visibility mechanisms.

Using a qualitative digital ethnography approach, this research is based on non-intrusive observation of selected public brand accounts on Instagram and Twitter. Content using hashtags such as #TBT and #ThrowbackThursday was examined to understand how digital nostalgia is amplified through algorithmic circulation. The findings reveal that algorithm-driven promotion of nostalgic content not only enhances users' emotional connectivity and sense of community but also generates concerns about data visibility and user autonomy. Some users were observed to later remove their engagements, suggesting a potential discomfort with the visibility or implications of their digital interactions.

The study highlights that digital nostalgia—while fostering emotional continuity—can also reinforce the complexities of personalization and data ethics in platform economies. By focusing on the interplay between emotional experience and algorithmic mediation, the study contributes to a deeper understanding of how affective engagement and concerns over data privacy co-evolve in contemporary digital culture.

Keywords : Algorithmic Recommendations, Digital Nostalgia, Machine Learning, Media, Communication

Algoritmik Nostalji: Makine Öğreniminin Geçmişle Duygusal Bağlantılarımızı Şekillendirme Yöntemleri

ÖZ

Algoritmik olarak şekillenen medya ortamlarının giderek etkisini artırdığı günümüzde, nostalji dijital platformlar içinde güçlü bir duygusal araç hâline gelmiştir. Bu çalışma, Instagram ve Twitter'daki algoritmik öneri sistemlerinin nostalji temalı içeriklerin oluşumunu nasıl kolaylaştırdığını ve kullanıcıların duygusal katılımını nasıl etkilediğini incelemektedir. Marka hesapları tarafından paylaşılan geçmişe dönük içeriklerin, kolektif belleği harekete geçirecek biçimde nasıl kurgulandığı ve algoritmalar aracılığıyla görünürlük kazandığı analiz edilmiştir.



Çalışma, nitel dijital etnografi yöntemiyle yürütülmüş; Instagram ve Twitter’da seçilen halka açık marka hesapları üzerinde müdahalesiz gözlem yapılmıştır. Özellikle #TBT ve #ThrowbackThursday etiketleriyle paylaşılan içerikler incelenerek dijital nostaljinin algoritmalar yoluyla nasıl yeniden üretildiği değerlendirilmiştir. Bulgular, algoritmaların nostalji temalı içerikleri öne çıkararak kullanıcıların duygusal bağlarını ve topluluk hissini güçlendirdiğini, ancak aynı zamanda veri görünürlüğü ve kullanıcı özerkliği konularında endişeleri de artırdığını ortaya koymaktadır. Bazı kullanıcıların içeriklerle kurdukları etkileşimleri sonradan kaldırdıkları gözlemlenmiş, bu durum dijital etkileşimlerinin yarattığı görünürlük ya da sonuçlara dair bir rahatsızlık hissine işaret etmektedir.

Sonuç olarak, dijital nostaljinin duygusal sürekliliği teşvik ettiği kadar, kişiselleştirme ve veri etiği meselelerini de pekiştirdiği görülmektedir. Bu çalışma, duygusal deneyimle algoritmik arabuluculuk arasındaki ilişkiyi ele alarak, dijital kültürde duygusal bağlılık ve veri mahremiyetine dair endişelerin birlikte nasıl şekillendiğine dair derinlemesine bir anlayış sunmayı amaçlamaktadır.

Anahtar Kelimeler : Algoritmik Öneriler, Dijital Nostalji, Makine Öğrenmesi, Medya, İletişim

INTRODUCTION

In today’s algorithmically mediated media landscape, nostalgia has become a strategic and emotional device embedded within digital content flows. Rather than existing merely as a sentimental longing for the past, digital nostalgia now plays an active role in how users engage with social platforms, reinforcing emotional ties and personal narratives through curated experiences. Content that recalls past decades, cultural moments, or personal memories is not only widely consumed but is often algorithmically elevated due to its high engagement potential.

This study focuses on the intersection of nostalgic effect, algorithmic visibility, and user interaction within Instagram and Twitter. Both platforms have established mechanisms such as memory prompts or throwback hashtags that routinely bring past content back into circulation. Through machine-learning-driven personalization, these platforms do not simply surface content from the past but actively frame and filter what kind of memories are worth re-experiencing.

Building on Sedikides and Wildschut’s (2018) conceptualization of nostalgia as a self-regulatory psychological resource, and Van Dijck’s (2013) critique of datafication, this study approaches digital nostalgia as both a personalized emotional affordance and a socio-technical strategy. It explores how recommender systems contribute to memory-making in digital contexts, and how emotional resonance and data privacy anxieties co-evolve within these processes.

By observing public brand accounts on Instagram and Twitter, this research investigates how algorithmically circulated nostalgic content not only elicits emotional responses but also reveals users’ shifting awareness of data control and content visibility. In

doing so, it contributes to broader discussions on affective infrastructures, platform logics, and the ethics of emotional engagement in digital media.

1. CONCEPTUAL FRAMEWORK

This study draws on existing theories of nostalgia, affect, datafication, and algorithmic culture to explain how digital platforms shape emotional engagement through curated memory experiences. In particular, it situates digital nostalgia as both a psychological process and a socio-technical construct, where algorithms do not merely reflect user preferences but actively shape memory consumption through personalization.

From a psychological perspective, nostalgia is understood as a self-regulatory emotional resource that fosters continuity, belonging, and emotional resilience (Sedikides & Wildschut, 2018). This form of affective recall becomes especially significant when it is mediated by algorithmic systems that personalize content to resonate with users' emotional histories. Digital platforms such as Instagram and Twitter operationalize nostalgia through repeated exposure to past-themed content, often under hashtags like #TBT or "Throwback Thursday," which serve as structured prompts for emotional recall.

Sociologically, nostalgia is not only a personal sentiment but also a shared cultural phenomenon. As Davis (1979) notes, nostalgia often functions collectively, reactivating shared identities through symbols and narratives. In algorithmically managed platforms, these collective moments are encoded and re-surfaced through engagement metrics and recommender systems. Van Dijck's (2013) framework of datafication helps to explain how user memories are transformed into data points—engagement histories, visual preferences, and interaction patterns—that then feed back into algorithmic logics.

Furthermore, recent studies on platform governance and recommender systems show that nostalgic content is not neutral. Leong et al. (2019) and Milligan (2020) argue that nostalgia cues are strategically employed by platforms to boost emotional retention and extend user attention. This strategic use of nostalgia raises ethical concerns regarding data agency, transparency, and the emotional manipulation of users.

Thus, this study conceptualizes digital nostalgia as an algorithmically modulated emotional experience, shaped by user data, curated by platform infrastructures, and circulated through collective engagement. The framework integrates perspectives from communication studies, digital media theory, and emotional psychology to better understand how digital nostalgia both sustains emotional connection and invites critical reflection on algorithmic influence and data ethics.

2. METHODOLOGY

This study adopted a qualitative digital ethnography approach to explore how algorithmic recommendation systems on social media platforms contribute to the formation and circulation of nostalgia-oriented content. This method was chosen for its ability to deeply contextualize and interpret user-platform interactions within algorithmically shaped digital environments (Pink et al., 2016).

The research focused on Instagram and Twitter, two high-traffic platforms that actively use algorithmic recommendation engines and regularly surface memory-based prompts. A purposive sampling strategy was applied to identify brand-generated content that reflected nostalgic themes, particularly posts using hashtags such as #TBT and #ThrowbackThursday.

In addition to content sampling, two public brand accounts were selected for close observation. These accounts were chosen based on their engagement with retro-themed content, either by posting historically framed brand imagery or by participating in memory-based interaction patterns.

Data were collected through non-intrusive observation of publicly accessible brand accounts. During this process, nostalgic content, interaction metrics, and algorithmic prompts were monitored and documented. The observed data categories included:

- Captions and titles referencing specific timeframes
- User engagement behaviors (likes, shares, comments, mentions)
- Platform-generated algorithmic signals (e.g., resurfaced content or “Suggested for you” sections)

These observations highlighted how nostalgia-driven content is shaped both by brand strategy and algorithmic visibility. Rather than emerging purely from user activity, nostalgic narratives were found to be amplified through the platforms’ curation systems, reinforcing emotional and temporal continuity within user experiences.

Data analysis followed an interpretive communication research framework, using iterative thematic coding to identify three core analytical dimensions:

- Emotional Resonance

Nostalgic posts frequently used time-based references and cultural imagery to elicit emotional responses, such as longing, joy, or reflection.

- Interactive Participation

Users actively engaged with nostalgic content by liking, commenting, or sharing, especially during recurring digital rituals such as #TBT. These actions contributed to the co-construction of communal digital memory.

- Privacy Awareness and Content Removal

Although no direct interviews or comments were recorded, it was observed that some users removed their prior interactions such as comments or tags on nostalgic brand content. This behavior, while not explicitly explained, may reflect concerns around data visibility, personal exposure, or platform surveillance.

To ensure analytical reliability, two independent reviewers conducted parallel coding of the observational data. Through iterative discussion and cross-checking, consensus was reached on all thematic classifications, enhancing the credibility of the findings.

3. WHAT IS DIGITAL NOSTALGIA?

Where a new generation is concerned, the term "digital nostalgia" quite literally describes the resurfacing of memories, images, or events from the past through technology and digital media. Digital platforms are able to reconnect people more emotionally to their past because they are sources of content that remind users of their past. It may be some old photographs, old catchy songs, or anything else that comes under the definition of cultural elements associated with any definite era-in that respect, the nostalgic trend is a tool to facilitate remembering individually and collectively.

Boym (2001, p. 16) comments, While defining nostalgia as that sense of an individual's longing for the past, in the digital age, this gets reconfigured, especially through social media and content platforms. Grainge (2002, p. 54) refers to "the capacity of digital media to refigure nostalgia, to mobilize user feeling about the past. Digital nostalgia is a way for people to attach themselves to the past by means of access and the sharing of certain periods on those very platforms.

While digital nostalgia enables people to reattach themselves to their past, the very fact that this contact is made through digital platforms also reveals the other side of nostalgia-that one related to the effects on consumer behavior. Niemeyer (2014, p. 83-94) discusses "digital nostalgia in practice within marketing activities and mentions that it is efficient in enhancing emotional and social bonds".

4. WHAT IS ALGORITHMIC PERSONALIZATION?

It basically refers to the process through which digital platforms and applications use user information to deliver tailored content or services that match the needs, preferences, and

behaviors of every individual user. In the context of technologies such as big data, artificial intelligence, and machine learning, this topic has become increasingly relevant. Algorithmic personalization refers to a technique to personalize streams of content or recommendation systems by considering the interests, habits, and characteristics of users (Smith, 2019, p. 45 & Chen, 2020, p. 112)

These systems monitor the interaction made by users to predict the user preferences in order to view, read, or to buy something. For instance, social network sites rank what the user has engaged with in anticipation of what he or she might find most relevant to their interests. More precisely, the process is algorithmic, and it personalizes user experiences of content according to Gillespie (2014, p. 67).

The key goal of algorithmic personalization is increasing users' satisfaction and exposure to digital platforms. Recommendation algorithms of different content to individual users fuel other major digital platforms, like Instagram, Twitter, YouTube or Netflix. Quite a great deal of work is done with regard to how these recommendation systems truly work (Van Dijck, 2013, p. 112, Pariser, 2011, p. 45). Precisely, as the Filter Bubble theory explained by Eli Pariser states, algorithmic personalization will expose the users to specific content only that may foster particular biases and narrow-mindedness in acquiring information (ibid, 2011, p. 45).

4.1. Algorithmic Recommender Systems and User Experience

The algorithmic recommendation systems relate to various sophisticated analytics applied in the creation of personalized digital experiences where the user is targeted with customized content. These systems compare users' past behavior and interaction and identify which content may be of interest to the user. Netflix and Spotify classify and suggest content to their users according to the history of viewed or listened items. Such recommendations not only increase the time spent by users on the platform but also enhance users' satisfaction and loyalty (Davidson, 2010, p. 213, Gómez-Urbe & Hunt, 2016, p. 47).

Especially, content recommendations regarding the past drive the nostalgic feelings in the user. This is where algorithms trigger positive emotional responses by recommending content related to popular songs during one's childhood, old series, or even any key event. While doing so, it personalizes them with memories of the past rather well, which increases the dwell time spent on the platform even more. It learns about users' preference through algorithmic recommendations but also shows responses to their emotional needs, as expressed in Kaplan & Haenlein, 2019, p. 17, Chaney, Stewart & Engelhardt, 2018, p. 245).

Nostalgic Content and Algorithmic Recommendations Social networks, digital media, and video streaming services come up with special days for content creation as a way of

retaining users on the platforms. The algorithms on those platforms study the tendencies of users that have content that provides a retro flair and then promote content related to music, movies, or cultural events that were really popular during the user's childhood years. For example, the social media platforms develop the nostalgic-themed posts, like #TBT (The "Throwback Thursday" (TBT) trend gained popularity on **Instagram** around **2011**, where users began sharing nostalgic content using the hashtag #TBT. As the trend evolved, **social media algorithms actively promoted throwback content**, reinforcing nostalgia-driven engagement loops (Leong et al., 2019; Milligan, 2020). This phenomenon exemplifies how **digital nostalgia is systematically engineered**, shaping user engagement through **AI-driven personalization** (van Dijck, 2013).) and contents from specific historic periods that gain the attention of the users so as to enhance user interest in the nostalgic contents. The content improves the user experience on sites through the attainment of emotional satisfaction, as indicated by Rosenbaum & Wong, (2015, p. 2346), Fairclough (2018, p. 30).

To better understand how algorithmic recommender systems operate and their role in curating nostalgic content, it is essential to explore the mechanisms behind different recommendation techniques used in digital platforms.

Algorithmic recommender systems operate through various techniques that detect user behavior to provide personalized content. These techniques include:

Content-Based Filtering: This approach suggests content based on a user's past interactions. It relies on analyzing similarities between consumed and recommended content (Ricci et al., 2015).

Collaborative Filtering: This method predicts user preferences by analyzing the behavior of similar users. It is widely used in streaming services like Netflix and Spotify to enhance engagement through nostalgia-driven recommendations (Gómez-Uribe & Hunt, 2016).

Hybrid Recommendation Systems: Combining both content-based and collaborative filtering, these models aim to improve recommendation accuracy (Davidson et al., 2010).

Deep Learning-Based Models: Advanced AI-driven algorithms that refine recommendations by continuously learning from user interactions (Zhang & Chen, 2020).

The way algorithms deliver nostalgic content is based on analyzing user interaction data and behavioral patterns over time.

Recommendation systems use multiple data points to determine which nostalgic content should be shown to a user. These data points include:

- **User Interaction Data:** Algorithms track watch history, likes, and engagement to recommend past content (Milligan, 2020).
- **Demographic Insights:** Platforms shows user age and generational preferences to provide relevant nostalgic material (Sedikides & Wildschut, 2018).
- **Temporal Trends:** Some platforms prioritize nostalgic content during key events, such as anniversaries or seasonal periods (Grainge, 2002).

To illustrate the recommendation process, the following flowchart outlines how digital platforms generate personalized nostalgic content suggestions.

Step 1: User engagement data is collected (watch history, likes, shares).

Step 2: The algorithm processes data and categorizes user preferences.

Step 3: Personalized nostalgic content is recommended based on analysis.

Step 4: User interactions update the recommendation system for future accuracy.

However, the video streaming sites have also managed to develop various ways of offering nostalgic content to their users. For instance, Netflix tries to revive the viewer's interests in the past to include their childhood cartoons and television series by categorizing them under "Classics." The mere highlighting of such stuff results in users automatically spending more time on the platform and creating some emotional bond with it. More specifically, on Instagram and other social networks, such engagers make this content even catchier with their instant sharings that call others to take part either virtually or face-to-face. More precisely, #TBT calls its consumers to engage in an act of mutual participation through refreshing memories of times gone by, thus being closely and emotionally connected with users sheltered under a common hashtag.

In this respect, nostalgic content represents one of the most efficient means by which platforms can satiate users' emotional needs and increase loyalty towards them, according to Sedikides, Wildschut, & Baden (2004, p. 308) and Belk (1990, p. 670). By the content, users are able to feel connected with their past while digital platforms can create a more holistic user experience.

4.2. Algorithmic Personalization and Privacy Concerns

In the present information age, the chance to receive and the range of information is developing more and more. It interests them in how information is treated and then again

represented to the user in personalized forms. While algorithmic personalization definitely offers a lot of advantages from the point of view of digital platforms and applications, it has brought on varied concerns about data privacy on the part of users. This regular monitoring and analysis of users' behaviors raise an ethical debate at the very core of privacy violation of individuals. This is a problem that many works focused their attention on: the security of data collected in the process of personalization and the threat of its sharing with third parties. Among the many works are the works of Zuboff (2019, p. 45), Bucher (2018, p. 89).

In this respect, algorithmic personalization came to the fore as a system that, while improving the user experience in the digital world, was also threatening the privacy of users.

4.3. Data Privacy and Trust

While the potential of nostalgic content recommendations in building emotive connections on digital platforms, it raises a number of issues regarding data privacy and trust. In reality, personalized recommendations on digital platforms are based on various data regarding past user interactions, analyses of past content consumption, and interests. However, users' interest in such personalized content recommendations also raise questions about the extent and manner of their data usage (Zuboff, 2019, p. 78, Acquisti, 2004, p. 45). They are scared that, as consumers in such retro-memoir content delivery, their private information might be violated during processing.

Accordingly, following the famous hierarchy of needs by Maslow, basic needs for survival and participation in society, which are claimed by social scientists today, embrace psychological safety, one of the important needs to self-actualization, as creating a successful performance in all spheres of life, including personal, educational, and professional life.

Psychological safety describes the conditions under which people feel able to take the interpersonal risks of expressing their opinions, concerns, and ideas, and providing feedback-all without fear of negative consequences or needing to soften difficult truths. It is the culture that fosters the generation of ideas from all individuals without the fear of judgment or confrontation. In this kind of environment, for example, people can express their opinions against ideas, including those of the management, where they feel things are not working right and should be improved. It also encourages individuals to confess to their errors, express vulnerability, and address authority candidly with regard (McKinsey, November 2024).

Users' data privacy concerns against the tide of nostalgic content usually fall under three major points:

- 1.Data Processing of Personal Information and Ethical Issues: While processing data in order to provide personalized content, algorithmic recommendation systems have to monitor users' behaviour constantly. Data gathered in this process gives not just the history of individuals' viewing but also their emotional tendencies. Particular

recommendations based on nostalgic content demonstrate users based on their emotional tendencies, which again raises ethical issues with regard to users' privacy. That raises concerns that personal data cannot only be used for commercial purposes but also for emotional manipulation (Nissenbaum, 2010, p. 78, Tufekci, 2014, p. 56).

2. Lack of Data Privacy and Algorithmic Transparency: Most users do not have enough information about how algorithms work and what data is collected. This lack of transparency undermines user trust, especially in user data-driven services such as social media platforms. Without transparency about the decision-making processes of algorithms, users have difficulty understanding the potential risks to their personal data. This increases data privacy concerns (Pasquale, 2015, p. 112).

3. Data Security and Third Party Sharing: The digital platforms can sell or share the collected user data with third parties. Due to the uprising of popular nostalgic content its related data requirements are growing and so do the concerned questions on the security of user data, access to this data by third party companies opens up possibilities of misuse of the credentials of users and increasing risks of data security (Acquisti 2004, p. 35).

While such nostalgic content might come at the price of personalization of the user's experience, the privacy and security of the data on which such a process relies surely raises very important ethical issues. More precisely, uncertainty over the purposes for which and by whom users' personal data will be stored and used decreases trust in digital platforms. In this context, concerns about the privacy of data obtained through nostalgic content should be discussed more in the field of digital media ethics and legal regulations to protect users' rights should be considered (Zuboff, 2019, p. 102, Nissenbaum, 2010, p. 79).

4.4. Techniques of Emotional Bonding

Storytelling is among the most ancient strategies that humans have ever developed for the purpose of communication. Beyond the development of organizational culture, stories can enable people to connect with each other, create a unique perspective, and rally together on common goals (Fisher 1984, p. 8, Guber, 2011, p. 43). Digital platforms offer the user the opportunity to tell their story to their audience with every single piece of content created. While opening the doors to a new world of communication for the following audiences in this digital world that is going to be created with this content, it starts to create an emotional bond with the audience who follows the systematic content sharing over time. The bond that then emerged allowed the platforms to invent new influencers with a developing audience of their own, and for influencers to act as a bridge between them and the brands themselves, creating an organic system through which the recommendation mechanisms result in sales. Matching user data obtained from here with the right creators and followers is the algorithmic

mechanism which digital platforms are working on most intensively. The identification of users' past posts, interests in nostalgic contents, and creating an opportunity for them to make new stories is one of the newest and trendiest ways of creating emotional bonding with the users via digital platforms. The most obvious example of the user decisions taken with the use of the emotional brain can be found within the developing circle based on reliability.

In this situation , it is also useful to mention nostalgia and personalization. This, combined with personalized content, makes the longing for the past with nostalgic content even more effective. Algorithms used on digital platforms offer customized nostalgic content based on the individual's previous preferences and past interests. It is this content that evokes the past memories of the user hereby creating personalized experiences, and thus stronger emotional bonds, as suggested by Holbrook 1993, p. 252; Sedikides et al., 2008, p. 306. Algorithms can shows users' digital history and flash up, for them, the most pop music, photos, or content from a specific era; this makes individuals' ties to the past more tangible, deepening their experiences (Tufekci, 2014, p. 33).

"Nostalgic feeling has the ability to revive people's memories and fill them with positive feelings. More precisely, finding the content in an emotional response within an individual's memories has made users more interested in social media platforms and spending more time on interacting with these platforms as stated by Davis (1979, p. 422)". With this context, the algorithm-provided nostalgic content keeps the sense of being "special" and leads to emotional satisfaction in the digital environment.

4.5. Interaction and Engagement

Nostalgia-themed content functions as a powerful driver of user engagement on social media platforms. As Boym (2001) emphasizes, nostalgic narratives allow individuals to re-establish emotional connections with the past, satisfying a desire for continuity, identity, and emotional grounding. Social media platforms, particularly Instagram and Twitter, harness this affective appeal through algorithmic mechanisms that promote emotionally resonant content, thereby sustaining user attention and interaction.

Research suggests that nostalgic posts generate higher engagement rates—measured by likes, comments, and shares—than non-nostalgic content (Bolton et al., 2013, p. 249). This engagement is amplified when users participate in platform-specific rituals such as Instagram's "Throwback Thursday" (#TBT) or nostalgic hashtag chains on Twitter. These practices encourage users to revisit and share their own past, while also engaging with others' memories through responses, retweets, and quote tweets, transforming personal nostalgia into a social and interactive experience.

In both platforms, nostalgia operates as a feedback loop. On Instagram, the visual nature of the platform facilitates emotional immersion through filtered aesthetics and dated imagery. On Twitter, textual memory fragments often accompanied by hashtags or cultural

references allow for real-time interaction and discursive participation. In both cases, engagement is not only emotional but algorithmically rewarded—visible in increased visibility, trending tags, and prolonged screen time.

This interplay between user interaction and algorithmic amplification illustrates how engagement is not merely reactive, but shaped through strategic platform design. Nostalgic content thereby becomes a vector for emotional expression, community-building, and data generation—demonstrating how affective and algorithmic logics are deeply intertwined in digital participation.

4.6. Data Privacy and Ethical Debates

Today, it is pivotal that technological advancements and the problems and issues arising from those very opportunities have come under debate. In this realm, one of the major issues is related to the security of personal information regarding every individual on the face of this earth. Websites, internet search engines, and social media applications have been used widely in modern digital life and periodically capture their users' personal data. Such situations may bring great risks with respect to data security. These services also enable users to be better informed on matters of personal data security, one's 'digital footprint', principles of ethics in the digital world, the advantages and disadvantages of using digital platforms, and of their contribution to making the digital ecosystem more secure and sustainable.

“Although personal data is a concept that has existed throughout human history, it has gained more importance today, especially with the developments in the fields of law and technology (Köksalan, 2022, p. 15)”. The first official document on the concept of personal data was published by the Organization for Economic Cooperation and Development (OECD) on 23 September 1980 (OECD, 1980, p. 12). It gives the guiding principle on how personal data breaches can be avoided, including how security of information flow could be regulated.

Examples are personally identifiable information such as email addresses, social media, and online shopping activities; clinical information captured and retained within health systems; and information on financial transactions. While Article 6 of Law No. 6698 on the Protection of Personal Data defines personal data as "data relating to race, ethnic origin, political opinion, philosophical belief, religion, sect or other beliefs, dress, membership of associations, foundations or trade unions, health, sexual life, criminal convictions and security measures, and biometric and genetic data" (Official Gazette, 2016). Therefore, this definition has led to the legal construction that any information which identifies a person will be considered as personal data.

Personal data security is significantly vulnerable, especially in the digital context. Security breaches in data are allowed when some malicious people or hackers get

unauthorized access to systems and reach personal data. For example, the outcome of a cyber-attack on any database may result in theft, disclosure, or alteration of users' personal information. Commonly, these types of breaches have brought into danger very important information like financial information, health records, or social security.

Another severe threat to data security in a digital environment is malware. These malicious types of software can infiltrate users' computers and access their personal data for malicious processing. This type of software operates very often in forms that are not even noticed and realized by users. It creates dangers regarding the tracking, stealing, and manipulation of data.

Another type of threat is phishing attacks. With this attack method, "malicious people aim to obtain personal information by misleading users with fake websites, emails or messages (Scott, 2019, p. 38, Tchakounté et al., 2020, p. 95)". For example, users may be directed to a fake website and tricked into entering their bank account details. Such attacks can lead to the disclosure of personal data and exposure to fraud.

Finally, the other type of threat for personal data security is social engineering. In this attack method, "there would be plans to access personal data by manipulating individuals. Methods involving phone scams, on-site information requests, or misdirection capture people's information (Akça, 2016, p. 59)". The attackers would try to do this through psychological manipulations, distorted tales, and ways of gaining the trust of an individual.

With the rise in such threats, awareness of personal data security becomes an urgent need so that precautionary measures can be taken for security in the digital environment. The use of user data is also of particular importance in the context of data privacy and ethical debates.

Algorithms indicate users' personal data to create nostalgic content and emotional connection. In this process, algorithms collect and betray a wide range of data sets such as the user's browsing history, likes, shares and even location information. This data is used to provide customized content recommendations to the user, aiming to create a deeper connection with the user (Zuboff, 2015, p. 197). Yet, processing of such personal data by algorithms for making recommendations is susceptible to cross the boundaries of data privacy. More importantly, offering retro/nostalgic content specifically entails collecting and storing data on the user's pasts, perceived by many as an act against digital privacy per se (van Dijck 2014, p. 75). Adding to this, the fact that the users are not informed about what data is being collected and for what purpose enhances these ethical concerns (Tufekci, 2014, p. 153).

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connection with the user (Zuboff, 2015, p. 197). Yet, processing of such personal data by algorithms for making recommendations is susceptible to cross the boundaries of data privacy. More importantly, offering retro/nostalgic content specifically entails collecting and storing data on the user's pasts, perceived by many as an act against digital privacy per se (van Dijck 2014, p. 75). Adding to this, the fact that the users are not informed about what data is being collected and for what purpose enhances these ethical concerns (Tufekci, 2014, p. 153). User trust is at the forefront of these ethical concerns.

Whether or not users are aware of how their data is being processed while being connected to nostalgic content has a significant negative impact on user trust. "Social media and digital platforms may not inform users about this process when collecting personal data through algorithms. This can undermine users' trust in data privacy and undermine their trust in the platforms" (Acquisti, Brandimarte, & Loewenstein, 2015, p. 510). It follows from studies that in the case of users perceiving a violation of their privacy, their engagement and loyalty for the digital platforms goes down. "The lack of privacy in the digital environment makes the user feel less "safe" and more reluctant to disclose data (Nissenbaum, 2010, p. 77)". In this respect, "ethical issues concerning the protection of privacy influence users' confidence in the platform (Solove, 2008, p. 121)".

5. DISCUSSION AND PARTICIPATION

Nostalgic content has proved a most effective instrument in the creation of user engagement on social media platforms. Boym (2001) says nostalgic actions enable the user to re-activate affectively dense moments in the face of a requirement for individual and collective memory (p. 49). Algorithms on social media platform websites have actively incorporated the affective proclivity by algorithmically showcasing content in a way designed to bring about emotional resonance and thus increase user engagement.

Experiments verify the perception that nostalgically involving material will more willingly be passed on, endorsed, annotated and hence algorithmically appealing (Bolton et al., 2013, p. 249). The "Throwback Thursday" custom on Instagram is the ideal exemplar of the dynamic: it turns individual reminiscence into a formalised weekly interactivity ritual. With the reanimation of archived content and the user's inclusion in a group construct of time, the platform enhances interaction levels as well as rebrand itself as a digital repository for reminiscences.

This repeated interaction enables lasting emotional linkage among platform users and platforms. Referencing Zhang et al. (2019), emotional content reinforces content creation through the validation of the presence of users and digital reminiscence (p. 4). Such algorithmic growth hence aids platform development and individual expression.

Most critically, nostalgic engagement is crafted and extended as opposed to organic or neutral. Platforms utilize affect triggers in the quest towards extending user activity, platform utilization, and user data production upon which the recommendations are channeled. Such recursive logic undermines the co-construction of user engagement by algorithmic constructs and affect practices and in the process raises critical questions regarding autonomy, manipulation, and emotional labor operative in mundane digital practices.

5.1. Case Studies

To gain deeper insight into how nostalgia-themed content is surfaced and engaged with on digital platforms, a focused case study approach was applied to selected examples from the observed data. The purpose was to illustrate how algorithms and user interactions together shape nostalgic experiences online. Below are two representative cases, one from each platform.

Instagram and Twitter: Hashtag-Driven Nostalgia Loops

In order to consider how content by nostalgia circulates in and into attention on algorithmic social media sites, a comparative case research design was conducted. Two model cases were discovered in both Twitter and Instagram, based on a clear invoking on the broadly felt “Throwback Thursday” (#TBT) custom. The cases both involve two different companies beverages (Pepsi; reach date: 06.07.2025) and logistics (Maersk; reach date: 06.07.2025) turning the attention towards an industry-crossover consideration on the manner in which nostalgic imagery is employed in a conscious way towards audience engagement.

The data was gathered through a manual search for publicly released platform feeds and hashtag archives from 2021 through 2023. All publicly released posts from brand accounts officially authorized on the platform were included in accordance with ethics rules for gathering digital data. The lone selective filter was overt discussion of nostalgia in the content, adoption of the #TBT hashtag, and clear indicators of algorithmic amplification (e.g., presence in “Explore” modules, large engagement numbers, or indicators of virality).

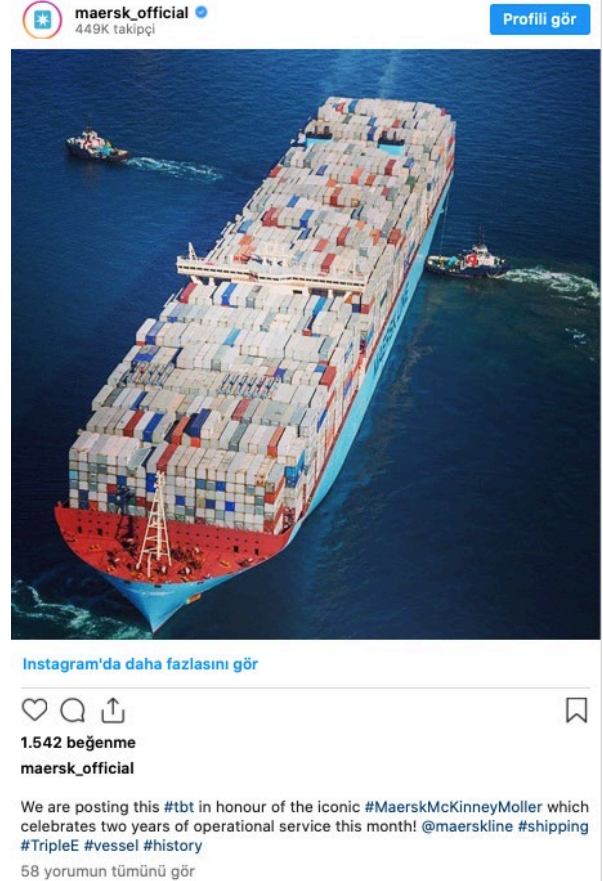
The analysis was undertaken through close reading of the visual and written content in each platform, platform-specific engagement indicators (shares, likes, comments), and the contextual placement of the content within the broader trends in hashtags. From this vantage

point, the research aims at revealing the manner in which algorithmic logics and user practices both construct and solidify digital loops of nostalgia on the various platforms.

Figure 1: Pepsi Official Twitter Account



Figure 2: Maersk Official Instagram Account



5.2. Findings

The analysis of the user engagement and tweet analysis on Twitter and Instagram shows the multifaceted interaction among participatory dynamics, algorithmic mediation, and emotional engagement. On social media websites, the activity of nostalgia occurs in more multifaceted manners than simple reminiscence but as a dynamic and active process where the user responds affectively, socially engages, and critically negotiates the curating on content filtered by the platform. The results discussed in the next sections greatly elaborate the related dynamics.

Emotional Engagement

Nostalgic content will necessarily yield robust affect reactions by re-activating both individual memories as well as public-cultural histories in users. Affective resonance will continually act on users to like, write about the content, or re-share the content by re-infusing

in the affectual flow of the platform the affect of the past. The affective dimension is especially dominant in the posts re-iteratively capturing the eye on the past through retro packaging stands, aged photograph filter compositions, or universal temporal referents like “Throwback Thursday.”

Participatory Interaction Participants engage in the nostalgia content through dozens of various interaction manners commenting, tagging acquaintances, making the same hashtags, and re-sharing on the stories or the feeds. Such activities help constitute the digital group and the reciprocal recognition in the process making the nostalgia from the solitary sentiment the common social practice. Memory caters the public performance through the participatory dynamics co-authored by the users and stimulated through the engagement measures by the platforms.

Algorithmic Knowledge and Ethic Issues

The increasing degree of user consciousness towards the practices of platform data and algorithmic presentations of content adds a crucial layer to the nostalgic effect. While there is empathetic response on the emotional level towards user curation of content, there is more discrimination on the level on which the algorithms themselves generate memory-driven content. That note brings forth questions on the level of manipulation, surveillance, and commodification of affect. Particularly the repetition in the popular nostalgic hashtags such as #TBT betrays the layer in which emotional memory is transmitted but systematized and commodified by algorithmic means.

CONCLUSIONS AND RECOMMENDATIONS

This research has covered digital nostalgia from the perspective of a sociotechnical phenomenon in the domain of algorithmic suggestion systems and emotional interaction between consumers and memory-driven content. The findings from the research indicate digital nostalgia on the web transcends a sentiment staring back and a data-driven and mediated process by the platform's algorithmic logic. More significantly, recommender systems by themselves are busy creating memory-driven content groupings based on consumers' prior interactions and hence hold platform attachment and emotional attachment.

While customized nostalgic material according to the specific users' digital footprints allows communion with the past through algorithms, the personalized treatment itself creates essential ethical unease. When increasingly many recognize how much material is collected from them, operated on by them, and exploited in order to generate the content world within which they participate, fear about privacy, observation, and unreadability by the algorithm intensifies. The ostensibly smooth interweaving between affective reminiscence and data-driven personalized material creates the two-fold effect the users are both critically disturbed and emotively engaged.

This tension reveals there is rising need for added algorithmic transparency in the area of how content invested with memory is aggregated and distributed. Operators should offer clear explanations regarding the procedures by which the personal data are being utilized in distribution of content in manners making the user an active participant in digital culture and not a passive recipient. More algorithmic transparency can facilitate confidence building, prevent misinformation, and alleviate ethical risk by way of affect manipulation.

In addition, there needs to be more research into how digital nostalgia converges with wider psychological and cultural dynamics especially within the contexts of identification construction, consumerism, and digital well-being. There is also a pressing requirement for the establishment of regulatory and ethical guidelines protecting user data in a way that does not compromise the cultural and affective roles performed by nostalgic content. A lasting digital media environment will bring together affective engagement and lasting ethical responsibility. Platforms that recognize the affective aspect of algorithmic curation and making commitments towards data openness and user agency will more likely gain credibility, lasting usage, and positive digital interactions.

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