

Leveraging Twitter Data: Creating a Global Hub of Trending Events

(Technical Paper)

Exploring Social Media and the Fear of Missing Out

(STS Paper)


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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

With the rise of the digital age and the ever-growing advancements in technology, people have been able to communicate and connect with one another on a scale that has never been seen before. Social media platforms such as Facebook, Twitter, Instagram, and Snapchat have allowed people to not only maintain their current relationships, but to form new ones as well.

Additionally, as these social media sites continue to become more ingrained in the daily lives of many, their influence has become widespread, affecting various facets of their users' lives. A 2021 survey of U.S. adults found that 70% of Facebook users, 46% of Twitter users, 59% of Instagram users, and 59% of Snapchat users use the site daily (Walker & Matsa, 2021). On top of that, these numbers are even higher among young adults, where the overwhelming majority of have been found to be using social media (Pew Research Center, 2021). Outside of being used for keeping up with friends and family, social media has also had a profound effect on the way people get their news. In fact, 48% of U.S. adults have cited getting news on social media and 94% of U.S. journalists say they use it for work (Jurkowitz & Gottfried, 2022). Social media and its impact will be a prominent part in both my technical and STS papers. My technical paper detailing a Twitter-based web application I helped build during my internship and my STS paper examining social media, the fear of missing out, and mental health.

Technical Topic

Last summer, I participated in a software engineering internship at a small company where I and four other interns worked together to build a fully functional web application from the ground up. This was my first internship and my first experience with software engineering in a real workplace environment. During my time there, I was able to learn a lot about software engineering best practices and what it looks like to be a software engineer. The internship began

with two weeks of workshops where we were exposed to all the technologies we would be using over the summer. From there, we immediately began to develop our application while following real-world agile software engineering methodology.

As previously mentioned, during my internship, I worked on a team with four other interns to build a web application. Our web application dealt with Twitter, one of the largest social media sites in the world. Twitter is a platform where users can post short online messages called tweets. When Twitter's algorithm deems a particular topic popular enough, these topics are then considered to be "trending" and are shown to users based on their following, location, and interests. Additionally, as Twitter and social media in general have evolved over the years, these platforms have become a way for users to keep up with current events around the world. In fact, a 2021 survey of U.S. adults found that 55% of those who said they use Twitter reported consistently getting news on the platform (Walker & Matsa, 2021). Not only that, but out of all social media platforms, Twitter is the most used by journalists with 69% saying that it is in their top two most used social media sites for work (Jurkowitz & Gottfried, 2022).

Currently, Twitter offers no straightforward way for users to view and compare trends from around the world. This makes it difficult for those who use Twitter to gain an understanding of current events outside of the personalized list that Twitter shows them. Our web application collected trending topic data provided by Twitter and displayed the top-ranking global trends alongside a heatmap. Users were also given the ability to search for a specific location and view what was trending there, provided Twitter had data for that location. The application consisted of two main pages: the homepage and the locations page. The homepage displayed the current top 50 global trending topics along with the heatmap. In addition to this, it also contained a tweets preview, which would show a couple of sample tweets under the trend

that the user selects. On the other hand, the locations page housed the location search functionality; users could input a location into the search bar and the application would retrieve the list of trends in that location.

Our goal was to create an intuitive application that would enable users to keep up with current events around the world. By the end of the internship, the main functionality of the application was completed, but there were some future additions that we would have liked to have implemented. These features include an API workaround to reduce rate limiting, sentiment analysis for tweets under trends, trend and tweet translation, as well as analysis of trends over time.

STS Discussion

While developing our application, I began to think more about the hold social media sites like Twitter have on people, especially today's youth. Since its inception, the popularity and impact of social media has been ever-growing. In 2019, 70% of adults in the United States said that they used social media, a number strikingly higher than the 5% who did so in 2005 (Allen, 2019). Alongside this rapid growth in popularity, follows an increase in impact. From homemade YouTube videos blasting a then 13-year-old Justin Bieber into global stardom (Rizzo & Schollenberger, 2021), an ice bucket challenge raising \$115 million dollars for the ALS association (ALS Association, n.d.), and now the meteoric rise of TikTok; there is no denying that the impact of social media will continue to snowball. However, because of this, there is a great cause for concern when it comes to time spent on social media and its effects on self-perception and mental health.

As stated in the introduction, a substantial portion of social media users use social media daily. Furthermore, the majority of adolescents and young adults are on social media, two age groups, which many consider to be someone's most impressionable years. When taking all of this into account, it is no shock that there are concerns regarding how social media can have negative effects on someone's mental health. While social media is great at helping people maintain relationships with family and friends, it is also a place where some people choose to spread hate and harass others. Actually, a 2021 study conducted by YouGov reported that 75% of people who have experienced harassment online have experienced it on Facebook (YouGov, 2022). Instagram and Twitter follow right after, each with 24% stating that they have been bullied on the platform (YouGov, 2022).

Another aspect of social media that has the potential to have harmful effects on mental health is social comparison. Social media feeds are often considered "highlight reels" as people are more inclined to only post the best moments of their lives. Therefore, almost all of these social comparisons being made on social media are people comparing their day-to-day life to a curated feed of someone's best moments. Over time, enough of these comparisons could have negative effects on one's own self-perception and well-being. In fact, one survey found that passive social media usage, viewing other people's photos, comments, updates, and etc., does have a positive correlation with upward social comparisons among users and their friends, which in turn is correlated with lower self-esteem (Wang et al., 2017).

These social comparisons can further be associated with the fear of missing out, or FoMO. FoMO can be described as the feeling of anxiety or envy caused by the belief that others are living better lives than you are (Scott, 2022). This is often felt by social media users who see photos or videos of others that are living the "perfect" life (Scott, 2022). Having grown up during

the rise of social media, I have seen and experienced FoMO firsthand in my life, and so, I am no stranger to the reality of social media and the negative effects it can have on people. In my STS paper, I will further analyze the relationship between social media, FoMO, and mental health. I hope to find potential solutions to better safeguard social media users from feeling the need to compare themselves to others, and as a result, from experiencing FoMO.

Research Question and Methods

Through my STS research, I plan to answer a couple of questions: why has social media been linked with causing or exacerbating FoMO in its users, what effects FoMO in conjunction with social media can have on an individual, and what changes can be made to the social media landscape to not only prevent FoMO, but other negative feelings originating from social media use. My goal is to gain a thorough understanding of social media and its impact on the mental health of users, but with a focus on FoMO specifically. In doing so, I plan to read current literature surrounding the topic, as well as firsthand accounts of people who have experienced FoMO from social media and how they combatted it.

Conclusion

The common theme in both my papers is social media and its impact. My technical paper will focus on my experience as a software engineering intern creating a web application that uses Twitter data. The application is an example of how social media can be used in a beneficial way, enabling users to stay up to date with events around the world. In my technical paper, I will go more in depth about the application, how the concepts I have learned in my undergraduate courses prepared me, and what I learned throughout the internship. For my STS research, I will explore the relationship between social media and FoMO. I will look at how the current

environment of social media helps breed social comparisons among users, which in turn can have adverse effects on one's mental wellbeing. Furthermore, I hope to find ways to mitigate FoMO among social media users.

References

- Allen, S. (n.d.). *Social media's growing impact on our lives*. <https://www.apa.org>. Retrieved September 30, 2022, from <https://www.apa.org/members/content/social-media-research>
- ALS Association. (n.d.). *ALS Ice Bucket Challenge Commitments*. The ALS Association. Retrieved September 30, 2022, from <https://www.als.org/IBC>
- Jurkowitz, M., & Gottfried, J. (2022, June 27). Twitter is the go-to social media site for U.S. journalists, but not for the public. *Pew Research Center*. <https://www.pewresearch.org/fact-tank/2022/06/27/twitter-is-the-go-to-social-media-site-for-u-s-journalists-but-not-for-the-public/>
- Pew Research Center. (2021, April 7). *Social Media Fact Sheet*. <https://www.pewresearch.org/internet/fact-sheet/social-media/>
- Rizzo, P., & Schollenberger, K. (2021, November 1). *How old was Justin Bieber when he got famous?* The US Sun. <https://www.the-sun.com/entertainment/1834463/justin-bieber-teenage-fame-pop-star-married/>
- Scott, E. (2022, July 19). *Do You Have FOMO? Here Is How to Cope*. Verywell Mind. <https://www.verywellmind.com/how-to-cope-with-fomo-4174664>
- Walker, M., & Matsa, K. E. (2021, September 20). *News Consumption Across Social Media in 2021*. *Pew Research Center's Journalism Project*. <https://www.pewresearch.org/journalism/2021/09/20/news-consumption-across-social-media-in-2021/>
- Wang, J.-L., Wang, H.-Z., Gaskin, J., & Hawk, S. (2017). The Mediating Roles of Upward Social Comparison and Self-esteem and the Moderating Role of Social Comparison Orientation in the

Association between Social Networking Site Usage and Subjective Well-Being. *Frontiers in Psychology*, 8. <https://doi.org/10.3389/fpsyg.2017.00771>

YouGov. (2021, April). *U.S. online harassment environments 2021*. Statista.

<https://www.statista.com/statistics/333977/online-harassment-environments/>