

# **Headlies: A Design Specification**

**Jacob Burke  
Ian Figon**

## Problem

As more people turn to social media to satisfy their news needs, modern news companies have begun to take advantage of our increasingly short attention spans in an increasingly fast paced world. The internet has become an enormously profitable area in the last two decades, with Google alone generating nearly 80 billion USD in 2016 ad revenue (Google: ad revenue 2001-2016). News organizations have been drawn to these huge economic incentives, and in order to get a piece of it, they need users to click on their articles. “Tabloidization” of online news has become a large problem because each click of an article translates to revenue, and the more shocking the headline the more likely the target is to click on the article. Recent research proves this by showing users feel compelled to click on these headlines because of greater emotions associated with shocking headlines (Chen, Conroy, & Rubin, 2015). And these outrageous and unverified headlines can have real consequences, for example “a 2008 hoax claiming that Apple CEO Steve Jobs had suffered a serious heart attack led to the company’s stock price falling by 10%” (Chen, Conroy, & Rubin, 2015). Because of all this, researchers agree that “the current state of online news is one that heavily incentivizes the speed and spectacle over restraint and verification in the pursuit of ad dollars” (Chen, Conroy, & Rubin, 2015) and research discussed later proves that even though modern users don’t read articles, they do read headlines.

So what causes this problem? Social media sites like Facebook and Twitter are becoming increasingly common news sources, and allow you to see a variety of headlines from a variety of places all at once (Hermida, Fletcher, Korell, & Logan, 2012). But because these sites allow you to see so much content all at once, there is often little incentive to read beyond the headline. Especially on enormous sites like Facebook, “an article from the New York Times, looks just like an article from the Onion and either may come with the endorsement of the friend who shared it” (Chen, Conroy, & Rubin, 2015). Because “people read by social media stream rather than by publication” (Adler, 2014), researchers are finding that although users don’t often read the articles they do read the headlines. Recent research suggests that of all the links shared by users of sites like Twitter, 59% are never actually clicked on (Gabelkov, Ramachandran, Chaintreau, Legout 2016). Research like this shows that there seems to be “vastly more niche content that users are willing to mention in Twitter than the content that they are actually willing to click on” (Gabelkov, Ramachandran, Chaintreau, Legout 2016).

Clickbait headlines are the result, which are “content whose main purpose is to attract attention and encourage visitors to click on a link to a particular web page” (Chen, Conroy, & Rubin, 2015). While we can’t stop news organizations from using clickbait headlines for profit, we can take steps towards making headlines a more reliable way of reading the news. Through our research we found that users often wished there was a way to conveniently avoid huge amounts of clickbait on the web. It’s often tedious and difficult to verify specific headlines on social media when there is a near infinite amount of other interesting topics to look at, and this problem has only increased the spread of misinformation.

## Solution

To address this problem we created Headlies, a browser extension that makes reading more accurate headlines less influenced by clickbait a seamless experience by automatically injecting in highly rated crowdsourced headlines while browsing the web. By automatically providing accurate headlines to users without needing direct user interaction, we allow users to

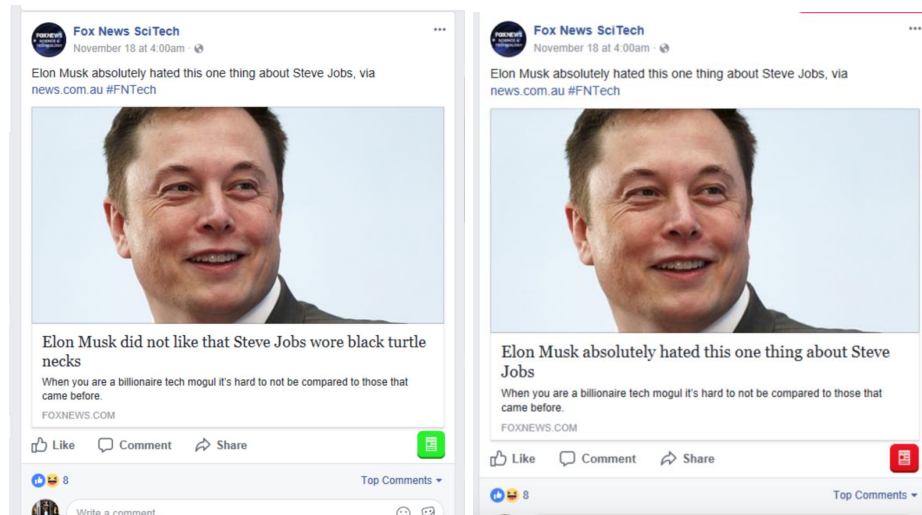


Figure 1: As soon as the user installs Headlies it will automatically inject in user submitted headlines while browsing the web. Notice the difference in the headlines

To toggle between the original headline and the Headlies headline, the user simply clicks on the Headlies icon. A green icon indicates that the user is viewing a top rated Headlies headline, a red icon indicates the original headline is being displayed. All other Headlies functions are controlled through an interface accessed through the toolbar of your web browser as shown in Figure 2.

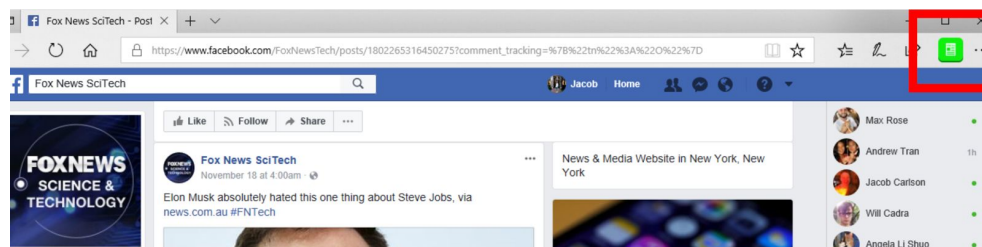


Figure 2: Clicking this icon pulls up all other Headlies functionality

On startup, clicking the icon in the browser toolbar will bring users to the menu shown in Figure 3. Users will be shown a Sign Up / Login screen that will allow them to create a new Headlies account or login to an existing one. Everyone that downloads Headlies will get the primary functionality of automatic injection of new headlines, but if users want to contribute to the community through voting or submissions they must sign in to an account.

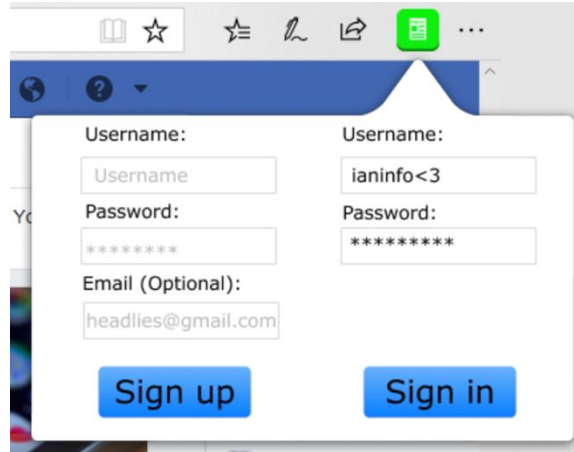


Figure 3: Headlies login and signup screen that will be shown on startup.

In order to be able to properly inject in highly-rated crowdsourced headlines for each article, we have introduced a system that allows users to easily submit their own headlines as well as vote on other user headlines. Using a classification algorithm, Headlies will be able to detect each unique news article that a user sees while browsing the web and it will retrieve all the user submissions for that specific article. In its classification algorithm, Headlies will scan through each page the user visits for links to known news sites. If a link is found, Headlies will scan through the information on the page that was linked to in an attempt to find an author, headline and coherent article. Once Headlies takes in this information it will attempt to find a match in our database, and as soon as it does the top rated user headline submission for that unique article will be immediately injected into the page. If there are 100 article links on the page this exact process will happen 100 times. A similar process will be executed if the user decides to actually click on the link and read a full article, where if the algorithm finds a match for the page in its database the new headline will be injected there as well, with an example shown in Figure 4.

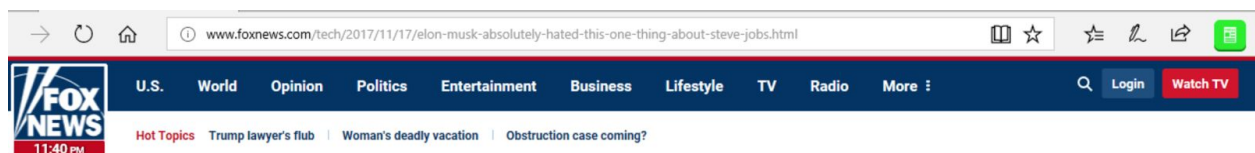
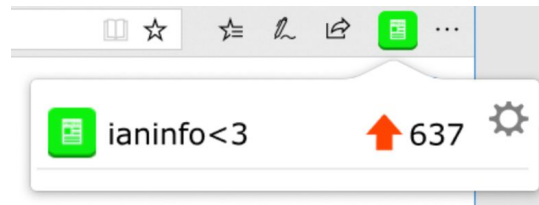


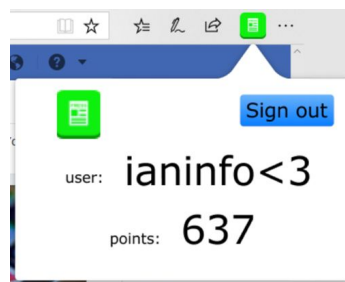
Figure 4: Headlies when reading an article

In order to access all the user submissions for a specific article outside of the top one displayed to all and be able to contribute to the Headlies community through voting or submitting your own headlines, the user must actually navigate to the article like in Figure 4. Though this may seem at odds with our problem which is that users typically only read

headlines and don't read articles, in order to enforce a high standard of user submitted headlines we must restrict user submissions to only those who have at least visited (and most likely read) the article. We feel that users who have not properly tried to read the article are not qualified to vote on a user submitted headline or submit their own accurate headline for the article. If a user is not currently reading a specific article, the menu pictured in Figure 5 will be shown which includes a user's username on the left, and their total accumulated points which will be discussed later. Clicking the gear will direct the user to the menu shown in Figure 6 which shows account information and gives users the ability to sign out.

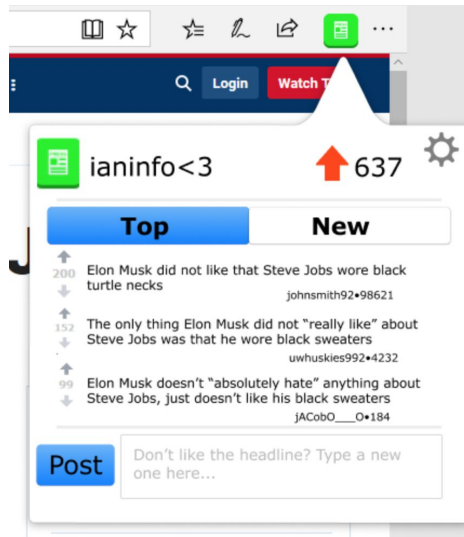


*Figure 5: Menu shown when not viewing a specific news article*



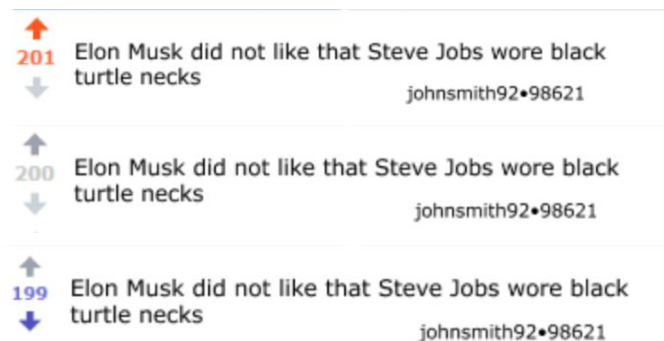
*Figure 6: Account information menu*

However if a user is currently reading an article like the Elon Musk example in Figure 4 where the user is reading it on Fox News, a larger menu will be shown that is pictured in Figure 7.



*Figure 7: Headlies Main Menu*

The main menu in Figure 7 contains the same information as the menu in Figure 5 at the top, but it also controls headline voting and new headline submission for the article the user is currently reading. The most highly rated user headline submissions will be shown in the “Top” menu and the newest submissions will be in the “New” menu, both in scrollable formats. Each entry in Figure 7 represents a user submitted headline that the user can vote on, and the up and down arrows are how the user votes on them. The number in between the arrows represents its total score which is calculated by subtracting the submissions total downvotes from its upvotes. In order for a submission to be eligible to be injected in to other Headlies users headlines, it must be the top rated and have a score of at least 10. The submissions author and their total score accumulated from all of their submissions scores is shown in the bottom as well. Figure 8 shows an example of a user voting.



*Figure 8: Users may submit a single upvote or downvote for each submission*

Headlies revolves around users contributing to the community through accurate headline submissions and headline voting. The points system was implemented as a way to motivate users to provide consistent, useful contributions. Other research though has shown that simply giving users tools to easily give back to the community is motivation to contribute in itself. Another similar project called Reflect by Travis Kriplean gave users the tools to quickly

summarize the main points of other users comments, and without even a points system the tool was a quick success. During a short trial in 2011, “734 bullets were written by 247 discussants, an average of 1.0 bullets per comment” (Kriplean, Toomim, Morgan, Borning, & Ko, 2012), and researchers found that the majority of these bullets were actually relevant and useful information. Through this research we are certain that Headlies is a powerful tool that has the ability to solve an increasingly large problem in the modern internet.

## **Evaluation**

To evaluate our design and whether it properly addresses our problem, we tested our prototype on a variety of INFO 360 students at the University of Washington and then interviewed them about their experience. We explained the purpose of the design before giving them free reign of the prototype and answered any questions they had during use. Users were primarily satisfied with the general ease of use that Headlies offers. Though our prototype was not able to accurately simulate scrolling through something like a Facebook home page, users seemed to like the idea of Headlies working in the background and doing the majority of the work for them.

Users seemed generally satisfied with the functionality of the main menu shown in Figure 6. Some wanted more functionality in general though and noted that there was no way to view your prior submissions or look at another user's prior submissions. By adding more functionality like this to future designs we would allow users to more easily identify whether a certain user is a credible and consistent user or not. Ensuring that users trust other user submissions is a critical part of Headlies, because without trust our design fails to meet its goals. Users also commented on the extremely fast pace of modern news and expressed doubt that Headlies contributors would be able to submit accurate headlines within the span of a few minutes since the vast majority of news readers will read each new story within a few hours.

But in general, users seemed to agree that clickbait is an increasingly large problem, especially on social media. All users we tested felt that our design generally does a good job of solving this problem without forcing them to put in a lot of extra time in to verifying headline claims. They also noted that with a robust community, Headlies would definitely cut back on the spread of misinformation through clickbait. By continuing to develop on our design using user feedback like this we can continue to cut back on clickbait headlines.

## **Limitations**

Despite our designs successes, Headlies unfortunately fails to accomplish its goals in a variety of different scenarios. The most glaring problem with Headlies is that it relies entirely on user contributions for success and without community involvement Headlies fails to perform completely. We are assuming that users will submit accurate headlines as well as up-vote relevant headlines and down-vote inappropriate and spam submissions. Without careful moderation, the system could be exploited to push whatever headlines a person may want to see to the very top, which would then be displayed to every Headlies user viewing the article. Also the vast amount of news content released each day means that Headlies immediately needs a large user base to be effective.

Because of these issues with crowdsourcing, it may be difficult to convince users to trust other user submitted headlines. No matter what moderation systems we add, some users will simply never trust other users to contribute responsibly, instead trusting journalists over

Headlies' anonymous user submissions. Other users that would fail to download the extension are those that don't view clickbait headlines as a problem, those that don't often read the news, and those who don't want to install extensions on to their browser. Headlies falls short for these users.

Because of the amount of user control in Headlies, bias can't be avoided in Headlies titles either. A more left leaning or right leaning community could drastically affect the quality of titles submitted and upvoted to the top, further dividing our user base and putting off a large number of users. Inherently biased articles are not solved by Headlies either, our goal is to make headlines more accurately reflect the content of the article but if an article is blatantly false it's questionable what direction a new headline should go in. Should users submit headlines that accurately reflect the fake content of the article or should they try to provide a headline that is less blatantly biased? Due to the large scope of our project these limitations are important to recognize and prepare for as we continue to develop on Headlies.

## References

Google: ad revenue 2001-2016. Retrieved December 11, 2017, from <http://www.statista.com/statistics/266249/advertising-revenue-of-google/>

Chen, Y., Conroy, N. J., & Rubin, V. L. (2015). Misleading Online Content. *Proceedings of the 2015 ACM on Workshop on Multimodal Deception Detection - WMDD 15*. doi:10.1145/2823465.2823467

Gabrielkov, M., Ramachandran, A., Chaintreau, A., & Legout, A. (2016). Social Clicks. *ACM SIGMETRICS Performance Evaluation Review*, 44(1), 179-192. doi:10.1145/2964791.2901462

Hermida, A., Fletcher, F., Korell, D., & Logan, D. (2012). Share, Like, Recommend. *Journalism Studies*, 13(5-6), 815-824. doi:10.1080/1461670x.2012.664430

Kriplean, T., Toomim, M., Morgan, J., Borning, A., & Ko, A. (2012). Is this what you meant? *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems - CHI 12*. doi:10.1145/2207676.2208621