A Preliminary Investigation of #a11y Tweets to Understand Accessibility Trends and Concerns

Joan Zhang[1,2] and Leah Findlater[1,3]
[1] HCIL and Inclusive Design Lab
[2] Department of Computer Science
[3] College of Information Studies
University of Maryland, College Park, MD 20742
joan.r.zhang@gmail.com, leahkf@umd.edu

ABSTRACT

Building on recent work analyzing online content to identify accessibility trends and challenges, this poster paper presents preliminary analysis of one month of tweets using the #a11y hashtag. Our analysis of ~4000 tweets suggests that the most active users of this hashtag are accessibility professionals, with less representation from end users in creating new tweets. By far the most common mention is of visual accessibility concerns, although other types of accessibility are represented. Qualitative assessment of the tweets reveals that #a11y is used primarily for design and development tips or resources, self-promotion tweets, and comments on the accessibility of virtual and physical experiences. Finally, we highlight open questions and plans for future work with this type of data.

Categories and Subject Descriptors

K.4.2 [**Computer and Society**]: Social Issues – Assistive technologies for persons with disabilities

General Terms

Accessibility, disability, #a11y, Twitter, social media.

Keywords

Keywords are your own designated keywords.

1. INTRODUCTION

Accessibility research has traditionally occurred on a relatively small scale, with lab studies ranging on the order of 5 to 20 participants. Recently, however, accessibility research projects have begun to increase in reach both through broad tool deployment [2,3] and by adopting large-scale online data collection methods [1,5]. As examples of the former, the public deployment of projects like VizWiz [2] and WebAnywhere [3] have allowed for evaluation with a wide range of users and assessment of long-term adoption patterns.

In terms of adopting scalable online data collection methods, one example comes from Anthony *et al.* [1], who analyzed ~200 YouTube videos depicting people with motor impairments interacting with touchscreen devices. By qualitatively coding the videos along dimensions such as "input device used" and "challenges observed," the study identified ways in which the devices empowered their users and important areas for future work (*e.g.*, the need for accessible multitouch input alternatives). Buehler *et al.*'s [5] analysis of assistive technology designs uploaded to Thingiverse offers a similar example of analyzing online community content.

Inspired by this work, we are interested in the degree to which Twitter data, particularly that tagged with #a11y, can offer insight into accessibility trends and concerns. While other hashtags, such as #accessibility, are also used, #a11y is a common hashtag that arose as a result of the 140 character limit set by Twitter. To save space, it is an abbreviation of the word "accessibility", where the middle 11 letters are shortened to the number "11".[1]

This poster paper presents preliminary analysis of one month's worth of #a11y tweets (~12,000 tweets), identifying both primary trends as well as open questions to explore in future work.

2. DATASET AND FINDINGS

Over a 31-day period in May – June 2015, we collected 11,925 tweets tagged with #a11y. From this full set, we removed 7,940 tweets that were prepended with the letters "RT" to indicate a retweet, leaving a filtered set of 3985 tweets. The following analysis reports on the filtered set of tweets only.

2.1 Who is tweeting?

The filtered data contained tweets from 1,157 unique Twitter accounts. The top 50 most active accounts made up just over a third (37.8%, N=1508) of the tweets. We categorized these top 50 accounts based on their descriptions on Twitter into companies, other types of organizations (*e.g.*, advocacy group), individuals who explicitly mentioned being accessibility professionals, other non-specific types of professionals, media outlets, or "unknown". By far the most common (N=23) were accounts held by individual accessibility professionals, with only 7 companies, 3 organizations, and 3 media outlets among this set of 50 most active accounts. Finally, only 3 accounts appeared to be personal accounts and the remaining were not clearly classifiable.

This data suggests that end users are not nearly as active with the #a11y tag as are industry professionals. It could be that end users are instead more active in consuming and propagating content through retweets, or tend to use more approachable hashtags such as #accessibility rather than the somewhat cryptic #a11y. We plan to examine these questions in future work.

2.2 What is being discussed?

To understand content of the tweets, we examined frequently occurring words, counts of tweets that included specific accessibility related words (e.g., "blind", "deaf", "autism"), and hashtags that frequently co-occurred with #a11y (e.g., #blind). We also qualitatively examined a randomly selected subset of tweets.

Table 1 shows the 20 most frequently occurring hashtags beyond #a11y and the 20 most popular words beyond "a11y" (after removing stop words such as articles and common verbs). Both

---

[1] http://www.digitalgov.gov/resources/improving-the-accessibility-of-social-media-in-government/

Table 1. Most frequent hashtags and words (other than #a11y) appearing in the tweets, including total counts and the percentage of tweets in which the tag or word appeared.

Most Popular Hashtags			Most Popular Words[a]		
Hashtag	Total Occurrences	Percent of Tweets	Term	Total Occurrences	Percent of Tweets
accessibility	455	11.4	accessibility	986	24.7
ux	258	6.5	accessible	348	8.7
pwd	251	6.3	ux	273	6.9
axschat	171	4.3	pwd	259	6.5
blind	170	4.3	blind	254	6.4
disability	102	2.6	web	233	5.8
webdev	77	1.9	people	210	5.3
global	65	1.6	axschat	188	4.7
inclusion	54	1.4	design	173	4.3
aoda	49	1.2	disability	172	4.3
design	47	1.2	disabilities	135	3.4
web	46	1.2	technology	123	3.1
eeaf2015	45	1.1	app	106	2.7
crpd	45	1.1	access	104	2.6
fb	43	1.1	global	90	2.3
apps	41	1.0	making	88	2.2
tech	40	1.0	tech	85	2.1
webdesign	39	1.0	apps	78	2.0
at	38	1.0	video	77	1.9
npo	38	1.0	webdev	77	1.9

[a] Stop words such as common articles have been removed.

lists highlight the design, development and technology focus of many of the tweets, although the hashtag #inclusion and the terms "pwd" (persons with disabilities), "disability" and "disabilities" appear frequently. Notably, "blind" is the only term describing a specific accessibility issue to appear in either list.

We further calculated the number of tweets that contained at least one term related to a small set of specific types of accessibility (e.g., visual, auditory, mobility). By far the most common type mentioned was visual accessibility. 9.2% of tweets (N=367) tweets mentioned the terms "blind", "vision" or "visual", and the term "blind" alone appeared in 7.2% of tweets (N=292). In contrast, "deaf" or "hearing" appeared in 2.1% of tweets (N=83), and "motor", "mobility" or "physical" appeared in only 0.2% (N=9). Cognitive accessibility mentions were not as straightforward to calculate, although we did observe use of terms such as "ADHD", "autism", "dyslexia" and "aphasia".

To understand tweet content in more depth, we randomly chose 200 tweets and manually coded them using an inductive coding process [4]. Among the most common types of tweets were those providing accessible design and development tips or links to related resources, self-promotion tweets, and comments on the accessibility of virtual and physical experiences. The design and development tweets are not surprising given the analysis in the previous section on who is tweeting. Self-promotion tweets came from individual accessibility professionals, companies, and other organizations. These ranged from advertising a talk and demo to touting a new software release to stating an accessibility-related accomplishment such as:

"Congratulations to @WorkflowHQ for winning an Apple Design Award for their commitment to #a11y: http://t.co/DDGmTB109C"

Comments on the accessibility of software or hardware interfaces, entertainment experiences, and physical settings were both positive and negative. Further analysis of these types of comments could yield insight into what successes companies and researchers

should seek to replicate and where to invest effort in addressing the most pressing issues discussed. Examples include:

"As someone with #ADHD, its great to see facebook's implementation of GIFs allowing users to pause them #a11y #ux"

"vodafone also an inaccessible coverage checker #a11y fail"

"Second printing of Splendor added iconography to be more accessible to colour blind players #a11y #boardgames http://t.co/sJIC8cwuGy"

Eleven out of the 200 tweets were also coded as relating to policy (e.g., request for comments on "508 accessibility") or grassroots activism (e.g., advertising a petition). Finally, by far the most common language represented was English, with only 12/200 tweets in other languages (French, Spanish and Portuguese).

3. OPEN QUESTIONS & FUTURE WORK

This poster paper presented preliminary findings from ongoing work analyzing Twitter data to characterize discourse around accessibility issues, identify accessibility successes, and inform areas where further work is needed. We are currently collecting a larger dataset and incorporating hashtags such as *#accessibility*, with which we plan to conduct more in-depth analyses. For example, social network analysis could allow us to identify prominent entities within the community. Examining patterns of retweets and *who* retweets versus creating original content could also be interesting and could allow for a better understanding of the importance of particular content—as opposed to our current analysis which weights each original tweet equally. A more robust analysis of tweet content beyond the 200 tweets qualitatively analyzed here would also be useful, perhaps using a crowdsourced approach. Lastly, we have yet to analyze the data in a manner that would lead to actionable items. Among the many tweets, there may be some that contain suggestions for developers of assistive technology for specific improvements that can be made.

4. ACKNOWLEDGMENTS

5. REFERENCES

[1] Anthony, L., Kim, Y., and Findlater, L.Analyzing user-generated youtube videos to understand touchscreen use by people with motor impairments. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13), ACM (2013), 1223–1232.

[2] Bigham, J.P., Jayant, C., Ji, H., et al.VizWiz: nearly real-time answers to visual questions. Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2010), ACM (2010), 333–342.

[3] Bigham, J.P., Prince, C.M., and Ladner, R.E.WebAnywhere: a screen reader on-the-go. Proceedings of the 2008 international cross-disciplinary conference on Web accessibility (W4A), (2008), 73–82.

[4] Braun, V. and Clarke, V.Using thematic analysis in psychology. Qualitative Research in Psychology 3, 2 (2006), 77–101.

[5] Buehler, E., Branham, S., Ali, A., et al.Sharing is Caring: Assistive Technology Designs on Thingiverse. Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15, (2015), 525–534.