A Survey of Visually Impaired Workers in Japanese and US Crowdsourcing Platforms

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Abstract

Crowdsourcing offers a new form of work that makes it easy for people to work from home on their own computers. However, for some people with disabilities, such as visual impairment, problems are encountered in completing tasks. In this study, a questionnaire was used to investigate the working conditions of and problems encountered by visually impaired people on Japanese and US crowdsourcing platforms. The problems overcome by visually impaired people, difference between the visually impaired crowd workers from different countries, and possible solutions are provided herein. This research can be extended to more crowdsourcing platforms and languages in the future.

Introduction

Crowdsourcing offers a new form of work that makes it easy for people to work from home on their own computers. An increasing number of crowdsourcing platforms (e.g., Amazon Mechanical Turk [1], Upwork [2], Japan's Yahoo! Crowdsourcing [3] and CrowdWorks [4]) are emerging.

Crowd workers can choose the task that they can perform in the crowdsourcing platform. However, for some people with disabilities, such as visually impaired people, there are problems in performing tasks (Zyskowski et al. 2015). This is one of the limitations of the general-purpose crowdsourcing platforms today.

There are 285 million visually impaired individuals worldwide (Bourne, Price, and Stevens 2012). Crowdsourcing can potentially offer a form of employment to people with disabilities (Zyskowski et al. 2015). Existing literature claims that crowdsourcing is promising for the employment of visually impaired people (Vashistha, Sethi, and Anderson 2018). As we will show, visually impared workers are doing a variety of tasks, but most existing studies have focused on transcription tasks.

In this study, an online survey was conducted to investigate the current status of crowdsourcing tasks and the problems encountered by visually impaired workers when performing these tasks. A possible solution to increase the number of potential workers, including visually impaired workers, who can get new jobs in a crowdsourcing platform has been provided herein.

Language is an interesting factor in performing microtasks. For example, the transcription task is suitable for English-speaking users; however, Japanese and Chinese users may encounter some problems because there are many homophones.

An online questionnaire on English and Japanese was prepared on main crowdsourcing platforms Amazon Mechanical Turk, CrowdWorks, and Yahoo! Crowdsourcing. These three platforms provide microtask functions. A total of 91 (about 30 for each platform) visually impaired crowd workers were recruited to investigate their working conditions and problems encountered on crowdsourcing platforms. The need for blind crowd workers was also analyzed.

The findings of this study are presented below:

- The number of task types for visually impaired crowd workers is limited.
- The time taken by visually impaired crowd workers to perform tasks is a general problem.
- The behaviors of visually impaired crowd workers are different because of the differences in language and screen reader.

The contributions of this study are presented below:

- Problems overcome by visually impaired people on three main crowdsourcing platforms (in English and Japanese) were identified.
- Possible solutions for decreasing the working time and improving the performance were obtained.

Related Work

Visually impaired crowd workers

Zyskowski et al. (Zyskowski et al. 2015) performed the first formal study on crowd workers with disabilities by conducting in-depth open-ended interviews and a survey with dis-

[1]Amazon Mechanical Turk: https://www.mturk.com
[2]Upwork: https://www.upwork.com/
[3]Yahoo! Crowdsourcing: https://crowdsourcing.yahoo.co.jp
[4]Crowdworks: https://crowdworks.jp

abilities. There were several barriers to accessibility and usability.

This survey was conducted in English only on one crowdsourcing platform, Amazon Mechanical Turk. This study is focused on the visually impaired workers on three main crowdsourcing platforms (in English and Japanese).

Microtasks for visually impaired people

BSpeak is an accessible crowdsourcing marketplace that enables blind people in developing regions to earn money by transcribing audio files containing speech (Vashistha, Sethi, and Anderson 2018). The transcription task is suitable for English-speaking users. However, Japanese users encounter some problems because there are many homophones.

Survey

An online survey was conducted on three main crowdsourcing platforms in English and Japanese.

A total of 91 visually impaired crowd workers (30 crowd workers each in Amazon Mechanical Turk and CrowdWorks and 31 crowd workers in Yahoo! Crowdsourcing) were recruited. Each of them received a reward of 2.5 dollars.

The survey contained 32 questions. The questions were related to the following: demographics, visual impairment, use of the crowdsourcing platform, and accessibility problems.

Result

Demographics

These questions included those on age, gender, education level, and working conditions.

80% (83.4% in the US, 77.1% in Japan) of the visually impaired crowd workers at least have a university degree.

93.4% and 19.5% of the visually impaired crowd workers in the US and Japan, respectively, do not have regular jobs. More Japanese workers use crowdsourcing as a part-time job; American workers use it as the main job.

Visual impairment

These questions include those on the type of visual impairment, letters they can read, and use of screen readers.

The types of visual impairment are blindness, low vision, night blindness, hyperopia, light sensitivity, and color blindness.

There are six screen-reader users. The screen reader includes NVDA, PC-Talker, ChromeVox, Narrator, and Pericles.

Use of the crowdsourcing platform

These questions include those on the reasons why they chose a crowdsourcing platform and experience on crowdsourcing platforms.

A total of 46.7% (56.7% in the US and 40.5% in Japan) of the visually impaired crowd workers took the survey. The tasks that they perform also include social-media tasks, product criticism, data labeling, transcription, translation, testing, and article writing. Most of the Japanese crowd workers only perform tasks such as taking surveys and writing articles.

Accessibility problems

These questions include those on the method of searching for accessibility tasks, problems that they overcome, function that they hope, and suggestions.

Approximately 10% (10% in US and 10% in Japan) of the visually impaired crowd workers mentioned time as a problem; they want more time to work or a reminder regarding the time left. Other problems include finding accessible tasks and addressing technical issues.

They want functionalities such as time pausing, functionality expansion, screen-reader features, facilitation of understand the content, typo-error check, and task recommendations by AI.

Screen-reader users

There were eight screen-reader users in the survey. Three of them only perform easy tasks; they choose tasks based on the payment and current events. Two of them have time-related problems, and two of them want the screen reader to support web pages.

Discussion

In this study, the survey was conducted in English and Japanese on three crowdsourcing platforms. English users performed more types of tasks than Japanese users did. Most of the Japanese crowd workers only perform tasks such as taking surveys and writing articles. In addition, some Japanese crowd workers want the typo error-check function. This is related to language differences and the screen-reader context. There are many homophones in the Japanese language. Braille and English letters have a one-to-one correspondence. However, braille and Japanese letters do not have a one-to-one correspondence. The voice of the screen reader and the actual spelling of the text do not match.

The survey results suggests several ways we can support visually impaired wokers with AI. For example, most tasks are simple text-based tasks. More complex text tasks, such as entity-matching tasks (Zhong et al. 2019), and more media-type tasks, such as image tasks (Zhong et al. 2020), can be extended. Time is also a very important factor. Some visually impaired crowd workers mentioned time as a problem. Reducing the working time is an important issue.

Conclusion

In this research, an online survey was conducted to investigate the current status of and problems encountered by visually impaired workers when performing crowdsourcing tasks.

The contributions of this study are as follows: The problems suffered by visually impaired people on three main crowdsourcing platforms (in English and Japanese) were identified, and possible solutions to these problems were obtained.

In the future, this research can be extended to more crowdsourcing platforms and languages.

Acknowledgment

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