

Is Google Chrome eavesdropping on you?

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There have been allegations that the popular web browser, Google Chrome, has the ability to eavesdrop on both you and the media you watch, in order to attract more supporters. It is important to check what Google Chrome is doing in the background and determine if it is monitoring your activities.

Since this issue is concerned with people's safety and privacy, it needs to be looked at more closely.

Google Chrome and the Chromium project

Chromium is an open source web browser platform project developed by Google. A team of developers working at Google developed Chromium under the BSD license. The basic goal of the project was to create a fast and reliable web browser. Google uses open source software developed under this project, as its license permits, and adds its own proprietary components to create the Google Chrome web browser.

The Chromium project is used not only by Google Chrome but also by many other applications and libraries such as Yandex Browser, Qt Web Engine, etc. In addition, various Linux distributions such as Debian and Ubuntu have browser packages. web named Chromium, similar to the Chromium project but different from Google Chrome.

Google Chrome is not free software. But by using the Chromium app that comes with Linux distributions instead of Google Chrome, you can avoid proprietary components added by Google.

How was the problem discovered?

Picture 1 of Is Google Chrome eavesdropping on you?

On May 26, 2015, Yoshino Yoshihito posted a bug report on the Debian Bug Tracking System. In this bug report, he summarized that after updating the Chromium application to version 43, the system downloaded an extension called "Chrome Hotword Shared Module" without Yoshihito's consent and when Yoshihito types *chrome://voicerecord* in the browser's address bar to get more information about the extension, it says that this extension has the permission "Allow to record audio" and therefore has the right access to the microphone.

After this bug report was published, many people shared information confirming the same condition. So what does all of this mean, and where does the problem begin?

What do we know about Google's voice search technology?

Chances are you've already tried the Google voice search feature on your computer or mobile phone. This feature starts working when you click the button that indicates you want to perform a voice search or when you open a special app designed for this purpose on your phone.

Google's servers record and analyze your voice from the microphone and compare it with previously stored samples. Currently, it is impractical to run advanced speech recognition functions directly on personal computers or mobile phones. Therefore, the use of cloud-based server clusters for analysis is inevitable.

Google uses artificial neural network models, inspired by the human brain's method of processing information, to better perceive speech patterns recorded in its speech recognition technology.

Picture 2 of Is Google Chrome eavesdropping on you?

Google takes advantage of its massive data, including previously analyzed web content and frequently searched queries, to improve its speech recognition process using its N-gram model. The N-gram model is developed for the cases where the probability of the Nth word is known based on (N-1) the previous word. For example, if there is a third word after 2 words such as "afternoon tea", the probability that this word is "mathematics" or "breakfast" will be different. To increase the success rate of predicting the third word in the example, we need data to feed the 3-gram model.

According to data provided by Google, in 2012, it used the 5-gram model (i.e. up to five consecutive words) and totaled about 12 billion sets of N-grams for speech recognition technology. While it is impossible to be certain of the extent to which these numbers have been reached today, it is safe to assume that they have increased significantly. Also, it's worth noting that this is not a static model and is still learning.

This detail is necessary to understand why the recorded voice was sent to Google's servers. The algorithms that keep learning on the aforementioned large datasets can produce fast responses, but this is only possible by running on multiple servers. Even if your personal computer gains the necessary processing power one day, Google will always have the edge because you don't have the large database needed to analyze.

Is voice search really dangerous?

Picture 3 of Is Google Chrome eavesdropping on you?

Voice search has been a Google product for a long time, but with Google Chrome version 43 and later, the process has gone a step further and is aided by a new model called OK Google. This feature works when you go to your browser's Google homepage or open a new tab in Google Chrome to go to an address. All you need to do is say the words you want to search after saying "*OK Google*". So, instead of clicking a special button to do a voice search, you trigger the speech recognition process by pronouncing the words *OK Google*. You can ask some interesting and useful questions using OK Google, which will ultimately make your life easier.

For this feature to work, your system needs to constantly listen to environmental sounds and capture the keyword OK Google. The analysis here is done on your computer because the word count is only two and it contains a specific audio sample and no data is sent to Google's servers. But the next analysis requires the server. Therefore, the way Google Chrome helps you search faster is to constantly listen to you. Furthermore, you do not receive a notification that your microphone is in use during this listening.

With the release of Google Chrome version 46, the OK Google feature is now gone. So, is there any other technology to replace it, or if so, how harmful is this technology for users, can we trust Google?

Even if Google is said to be one of the most secure tech companies in the world, if malicious hackers find a weakness in such technology, they can exploit it. Thus, the way such technology works might be that environmental listening is activated for certain people at desired times and continues to function normally the rest of the time.

In addition, Google's privacy policy states that Google uses users' voices to develop speech recognition technology. Of course, only Google can know about these voices. Or Google could even use it to catch criminals alongside the police. However, it is a situation that the average user should be aware of.

So what can we do?

Google is a really powerful company in terms of technology. It also has nearly all the web traffic in the world. This makes Google a superpower. Google is one of the investors in many of the voice search and analytics algorithms that have evolved over the years. That's why it's important to suspect whether Google Chrome is eavesdropping on you.

Because behind such large companies, there are serious financial investments, government support and publicly traded stocks, what you need to do here is protect yourself instead of waiting. wait for such big companies to protect you.

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