

The logo for GoopIR, where 'G' is blue, 'o' is red, 'o' is yellow, 'P' is blue, 'I' is green, and 'R' is red. The letters have a slight 3D effect with shadows.

USER'S MANUAL

V 1.1 beta

Universitat Rovira i Virgili

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*Chair in
Data Priv@cy*

<http://unescoprivacychair.urv.cat>



<http://unescoprivacychair.urv.cat>

Search engines, like Google, are a widely used tool by internet users. However, they have a number of problems that are detrimental to user's privacy. Search engines store queries of the users with the aim of customizing the answers to offer a better service. On the contrary, saving user's information makes possible the establishment of profiles, in addition to the danger that implies that the information that is being searched is confidential. For this reason, it is risen the necessity to create tools to protect the privacy when searching through a search engine.

GooPIR is a tool that allows the user to mask the key words of the search by the addition to each of them of a determined number of false key words before searching it in Google. These masking words are chosen so that they have a similar frequency to the original key words.

GooPIR can be used with any platform (Windows, Mac, Unix, etc)

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1. Introduction

This manual will let you use the basic functions of GooPIR. If you would like to know more about GooPIR and its internal operation, please consult the article [Josep Domingo-Ferrer, Agusti Solanas and Jordi Castellà-Roca, “h\(k\)-Private Information Retrieval from Privacy-Uncooperative Queryable Databases”, Online Information Review 33\(4\): 720-744 \(2009\).](#)

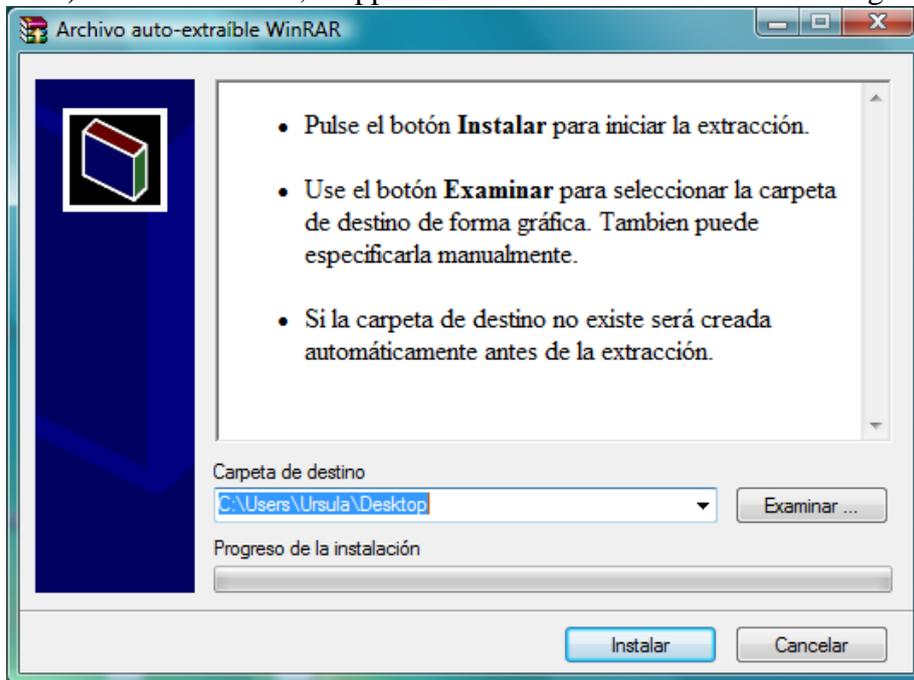
The provided package is composed of:

- A Java application that will be used as proxy by using the requests of the browser.
- An extension for Firefox that will allow to activate or deactivate the the redirection of queries from Google to GooPIR.

2. Installation

Windows

- a) Download “GOOPIR.exe” file.
- b) When executed, it appears a window similar to the following one:



- c) Select a folder where the program can be extracted and make click on “Install”.
- d) A folder named CRISES will be created. Inside can be found:
 - A JAR file named “proxygoopir.jar”
 - An XPI file called “goopir.xpi”
 - A folder called “files”.
 - A user’s manual in English (manual_eng.pdf) and Catalan (manual_cat.pdf).
 - The article “h(k)-Private Information Retrieval from Privacy-Uncooperative Queryable Databases” (GooPIRv10.pdf).
- e) Activate the proxy with double click on the JAR file.
- f) Install the plugin by opening the XPI with Firefox.

Linux

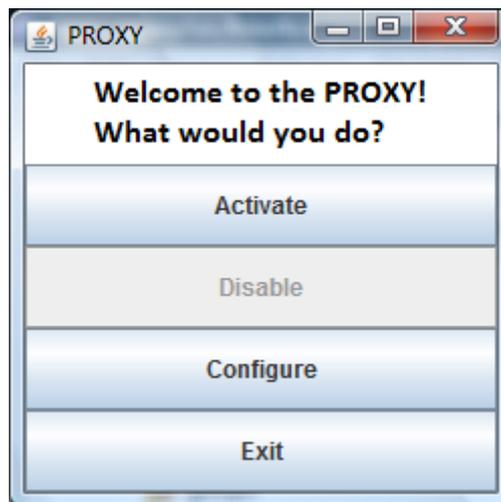
- a) Download the “GOOPIR.tar.gz” file.
- b) If Java is not installed, it is necessary to download the following packages: sunjava6-bin, sun-java6-jre and sun-java6-jdk.
- c) Extract the content of the zipped folder. It can be obtained:
 - A JAR file named “proxygoopir.jar”
 - An XPI file called “goopir.xpi”
 - A folder called “files”.
 - A user’s manual in English (manual_eng.pdf) and Catalan (manual_cat.pdf).
 - The article “h(k)-Private Information Retrieval from Privacy-Uncooperative Queryable Databases” (GooPIRv10.pdf).
- d) Activate the proxy by executing into the JAR file the following command on the console: `java -jar goopir.jar`.
- e) Install the plugin by opening the XPI with Firefox.

3. Proxy Operation

The proxy file “proxyGoopir.jar” is a Java application that works in proxy mode. Its objective is to analyze the requests of the browser and filter the queries in Google.

3.1 Proxy Activation/Deactivation

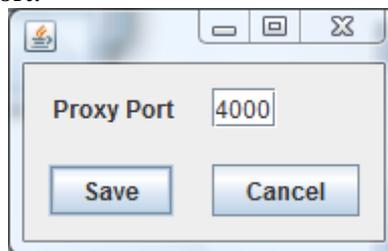
When running the program, it will appear the following window that will allow the user to activate or deactivate the proxy. To activate the proxy, the user will have to click *Activate*, and to deactivate, *Disable*.



NOTE: Proxy must be activated so that GooPIR works.

3.2 Port Configuration

The user will be able to configure the port through which the proxy will analyze the queries of the browser. By clicking *Configure*, it will appear a window that will allow modifying the value of the port.



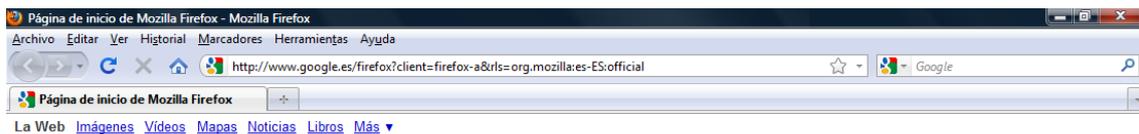
NOTE: The proxy and the plugin will have to be configured with the same port in order to guarantee the proper development of the application.

4. Plugin GooPIR

The “goopir.xpi” folder is an extension for Firefox that will allow activating or deactivating the redirection of the queries from Google to GooPIR.

4.1 Activation/Deactivation of the queries' redirection in GooPIR

The installed Firefox extension has a button on the status bar to activate or deactivate the redirection of the queries that a user makes to GooPIR.



The user will be able to activate or deactivate the queries in Google by clicking the button. The shape of the button once the redirection is activated and deactivated respectively will be the following:



Redirection activated

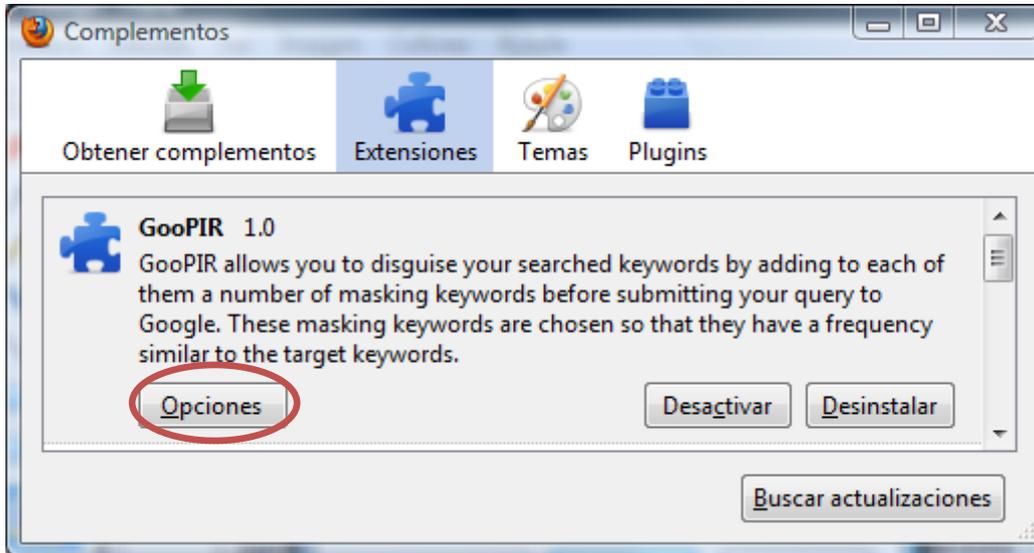


Redirection deactivated

When the redirection is activated, the user will be able to surf the internet as he/she has always done, but with the peculiarity that all the queries that are made through Google will be masked and filtered to provide privacy.

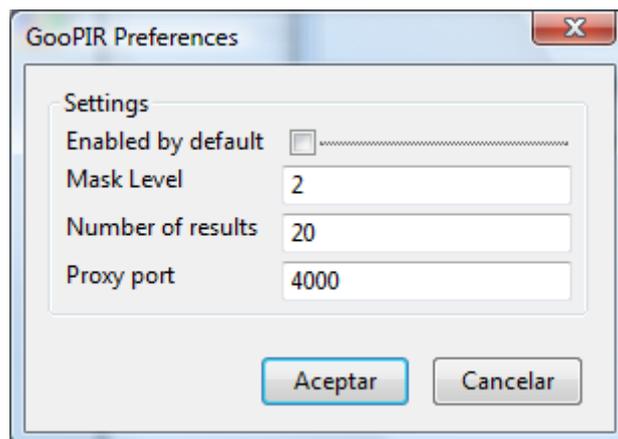
4.2 Plugin configuration

In order to configure the plugin parameters, please open the complements dialogue through Firefox menu: *Tools-> Complements*



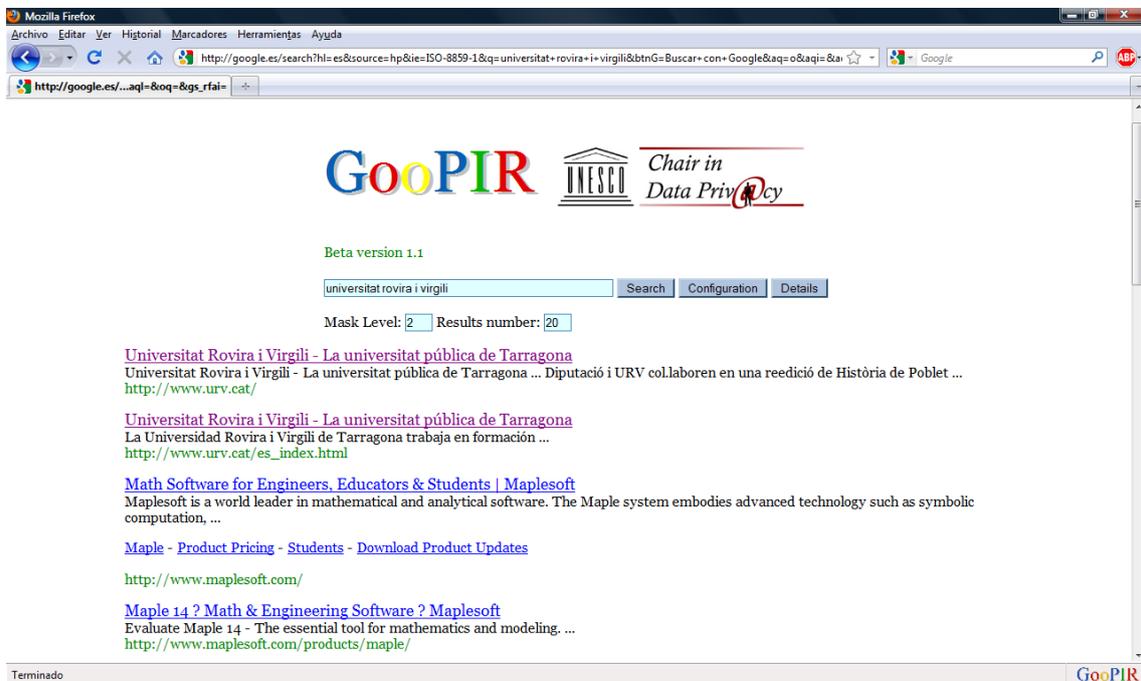
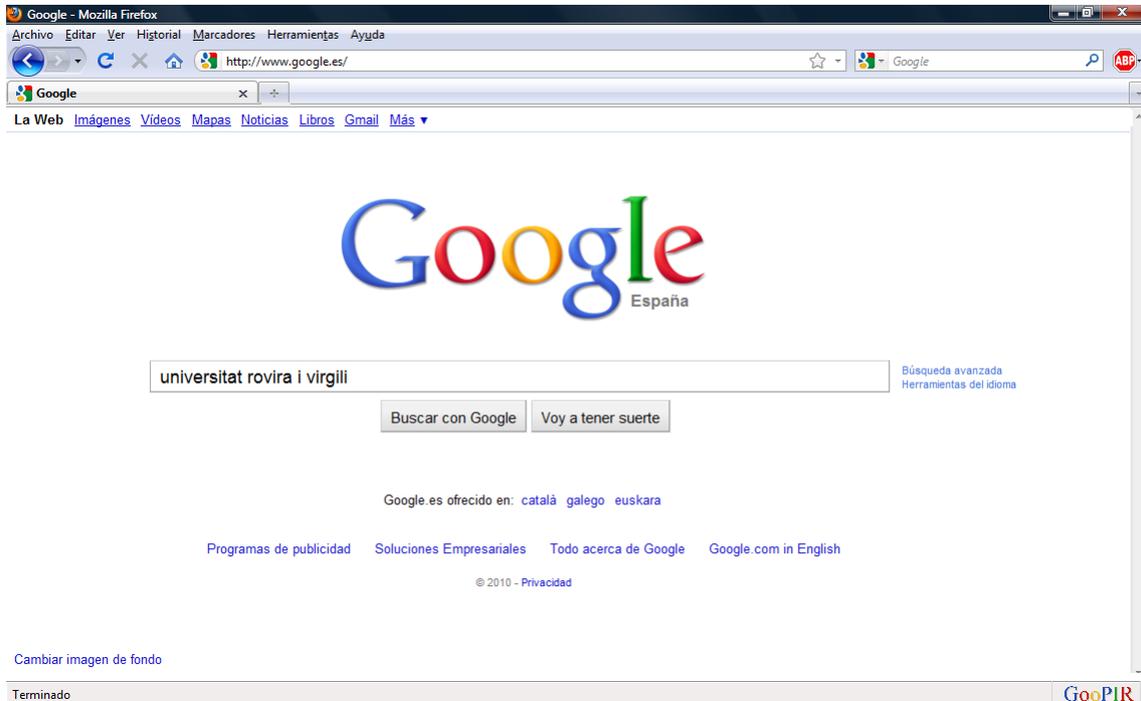
By clicking *Options*, the user can configure the default parameters of GooPIR.

- *Enabled by default*: To indicate that GooPIR is activated by default when launching the browser.
- *Mask Level*: Quantity of false words per search.
- *Number of results*: Number of results to show.
- *Proxy port*: Port to which proxy's requests will be sent.



4.3 Perform a search with privacy

GooPIR allows the user to perform a search with privacy in an easy and clear way by the use of any search bars of Google. If GooPIR is activated, queries will be masked and the filtered results will be shown.



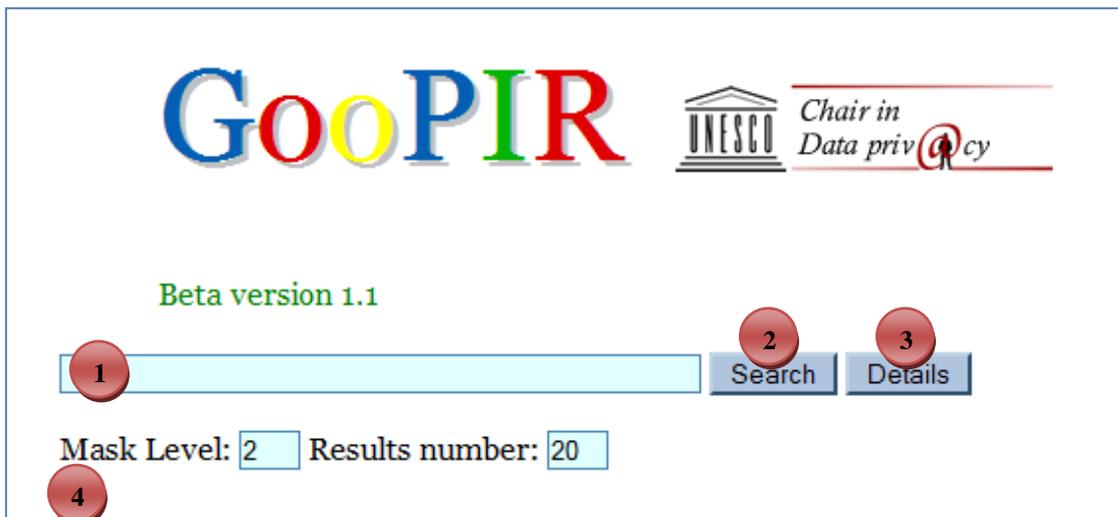
Visualization of the results filtered by GooPIR

4.4 GooPIR search environment

The user will also be able to make queries and configure them with privacy through the GooPIR environment. The user can access through <http://goopir>.

The search environment is composed of the following elements:

1. Search Bar
2. Search button
3. Search details button
4. Quick access to configuration parameters



GooPIR search parameters

4.4.1. Perform a search

In order to perform a search, it is necessary to enter the word or group of words in the search bar (1) and click *Search* (2). Once done that, the results obtained will be shown.

4.4.2 Search parameters configuration

Through the quick access button to the configuration parameters (4), the user will be able to configure the masking level (number of false words per search) and the number of results to be shown. By doing that, there is flexibility to change the parameters depending on the type of search to be performed.

4.4.3. Search details

Once the search is performed, the details of the search can be checked by clicking *Details* (3). The results of the entropy, the frequency of the word or the group of words searched and also the masking words added will be shown.