

IPR4SC

Developing Skills in Intellectual Property Rights Open Data for Sustainability and Circularity

Test report on Patent Quality Artificial Intelligence (PQAI)

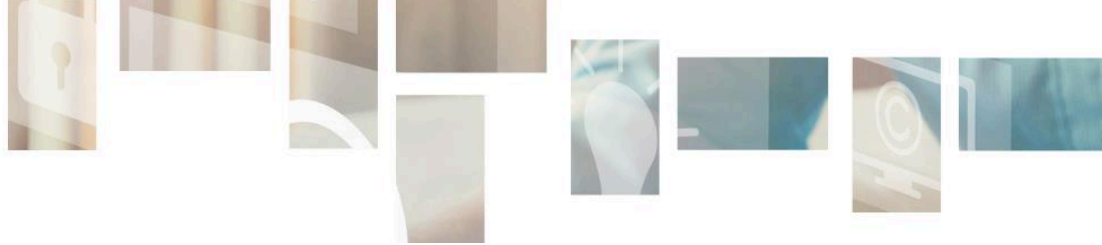
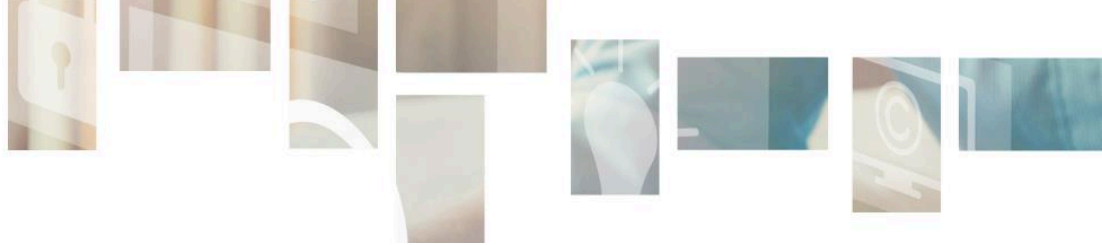


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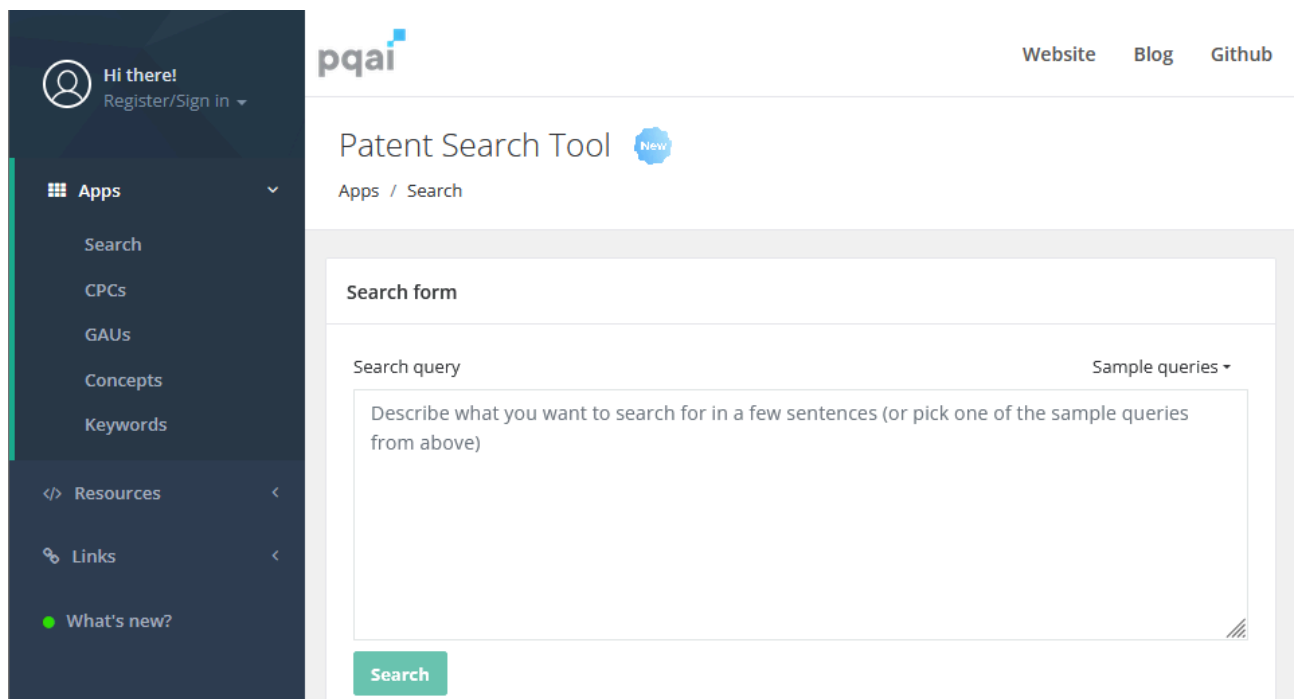
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1. Introduction

PQAI is a collaborative initiative to improve the patenting process by developing tools that enable better prior-art search and analysis. Registration is not mandatory for accessing any kind of embedded functionality: by simply clicking on the website link users are directed to the main page with the form to enter the search query.

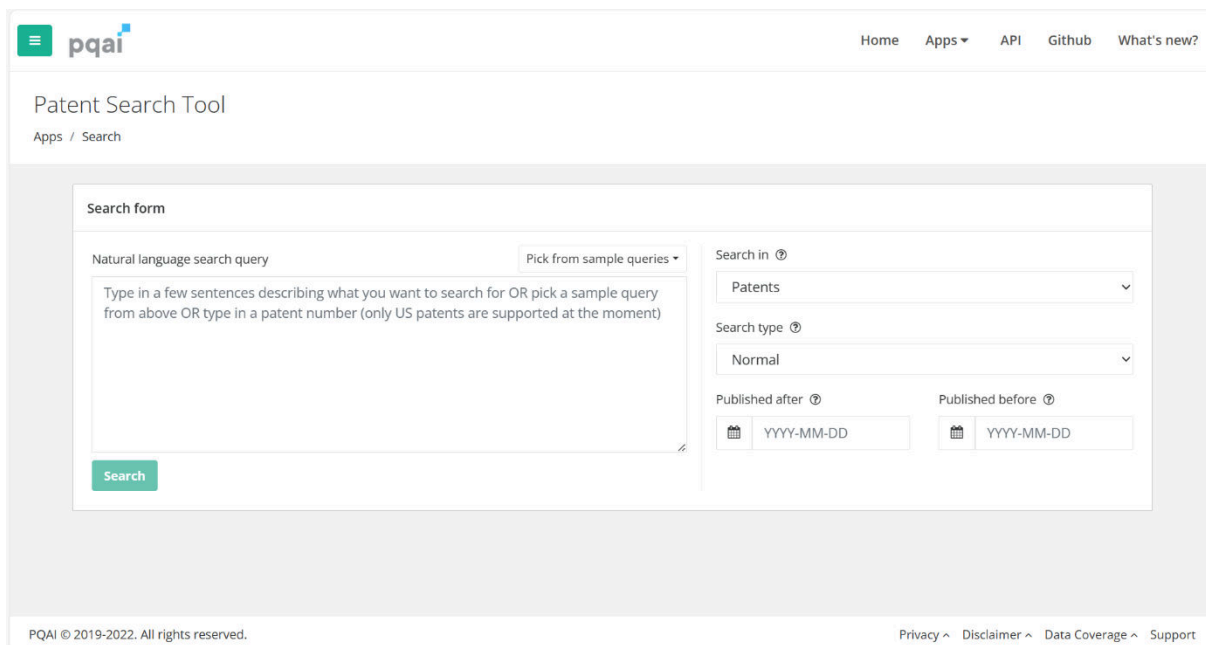
The tool provides a prior art search functionality on the patent database with limited analytics outputs based on data results. The user is provided with a search box where he/she can insert a brief description of what he/she is searching for, using natural language. The underlying Machine Learning algorithms will find the most similar documents (either patents or scientific literature contained in the database) to the provided description.



The screenshot shows the pqai Patent Search Tool website. On the left is a dark sidebar with a user profile 'Hi there!' and a menu with options: Apps (expanded), Search, CPCs, GAUs, Concepts, Keywords, Resources, Links, and What's new?. The main content area features the pqai logo, navigation links for Website, Blog, and Github, and a 'Patent Search Tool' header with a 'New' badge. Below this is a 'Search form' with a 'Search query' input field containing the text 'Describe what you want to search for in a few sentences (or pick one of the sample queries from above)'. A 'Search' button is located at the bottom left of the form.

2. Home page

The home page already displays the search bar in the center of the screen. Here the user can input the search criteria. On the upper right side of the screen the user can find some links, each pointing towards other functionalities, that will be introduced in the next chapters.



The screenshot shows the 'Patent Search Tool' interface. At the top, there is a navigation bar with 'Home', 'Apps', 'API', 'Github', and 'What's new?'. Below this is the title 'Patent Search Tool' and a breadcrumb 'Apps / Search'. The main area is a 'Search form' with a text input field for a 'Natural language search query' and a 'Pick from sample queries' dropdown. To the right, there are dropdown menus for 'Search in' (set to 'Patents') and 'Search type' (set to 'Normal'). Below these are two date input fields for 'Published after' and 'Published before', both with 'YYYY-MM-DD' placeholders. A green 'Search' button is located at the bottom left of the search form. At the bottom of the page, there is a footer with 'PQAI © 2019-2022. All rights reserved.' and links for 'Privacy', 'Disclaimer', 'Data Coverage', and 'Support'.

A search bar finds place in the center of the screen. Here the user can select among different search modalities: keyword-based, by publication number, by application number, by accession number, and semantic search. Users interested in chemical compounds can exploit the 'Chemical' option. There is also the possibility to build searches with a guided procedure by clicking on the 'Use Search Builder' button.

3. Patent search

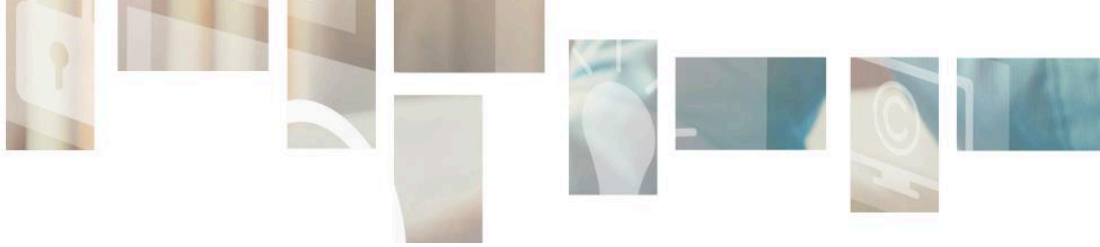
The tool allows for a semantic **search query** function. Starting from the user-given input, the search engine returns a list of 100 documents disclosing inventions that are similar to the searched topic. It does not indicate the total number of retrieved patents nor the similarity score. The data coverage of the database is based on about 11 million US patents and applications. No information about the precision of the search is given by the tool.

From the tests we made, apart from forcing the user to use more than a single word to generate the query, no other specific limitations to the text length were found. In the top right corner of the search box the tool provides users with some samples they can take a cue. By clicking on sample queries some alternatives are presented in cascade by the drop-down menu. Beginner users could take advantage starting from such prebuilt queries.

The search query function includes some other fields to bind the search such as the document type (patent, scholarly articles or a mix of both), the search type (normal or obviousness, in the second case results are paired in case of possible combination) and the publishing date (before or after a specific date).

As an example, the following text was inputted:

The present invention relates to a sorting machine that utilises advanced sensors and artificial intelligence to sort and process used electronic devices in an efficient and environmentally friendly manner. The machine comprises a sensor system that analyses the electronic devices and determines the optimal process for disassembly, cleaning, and repair. The sensor system in the present invention




comprises a variety of advanced sensors, including imaging sensors, thermal sensors, and spectroscopic sensors. These sensors work together to provide a comprehensive analysis of the electronic devices, identifying components that can be reused and those that need to be replaced. The sensor system is connected to an AI algorithm that processes the data from the sensors and provides instructions for the disassembly and repair of the electronic devices.

As previously mentioned, the results show only the top-100 retrieved documents according to the level of similarity with the inputted text.

Page 1

Inspection and sorting system and method for part repair PATENT

Harding et al. GENERAL ELECTRIC CRD settembre 11, 2003 [US20030167616A1](#)




An inspection and sorting system for part repair includes at least one sensor for inspecting a part. The sensor is configured to obtain inspection data for the part. A comparison module is configured to receive the inspection data, to generate a repair profile for the part using the inspection data, and to compare the repair profile with a baseline to arrive at a repair recommendation for the part. A method includes inspecting a part with at least one sensor to obtain preliminary inspection data for the part. The method further includes generating a preliminary repair profile from the preliminary inspection data, comparing the preliminary repair profile with a baseline, and arriving at a repair recommendation for the part based on the comparison.

[Show all drawings](#) [Save Result](#) [Open in new tab](#) [More like this](#) [Show mapping](#)

Device for sorting raw, pre-treated or recycled bulk material PATENT

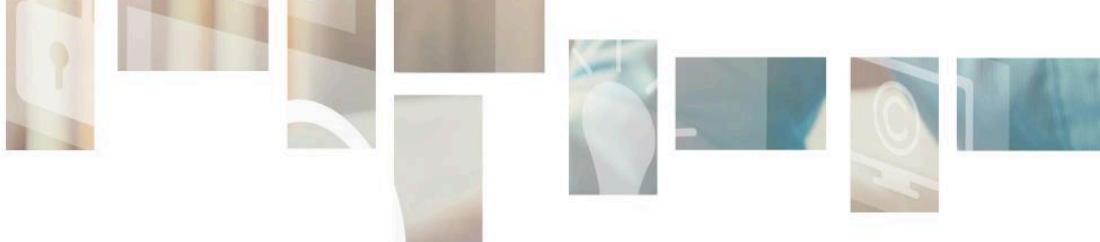
Sommer ASSIGNEE N/A maggio 22, 2001 [US6234317B1](#)



A device for sorting raw, pre-treated or recycled bulk materials, which are comprised of individual components to be sorted, wherein the classification of the parts to be sorted occurs along empirically determined classification parameters and the material which is sorted is removed, the device including a conveyance device for supplying the bulk material, a conditioning device for wetting the bulk material, a break-down device for breaking down the bulk material into individual parts to be sorted, a sensor device for sensing the classification-relevant characteristics of the components to be sorted and for production of measurement data, which includes at least one camera, which is connected to a device for evaluation of electronically measured values with at least one micro computer for classification of the components to be sorted and for achievement of a control signal by means of a control unit, wherein the camera is associated with at least one even diffused light emitting light source. The device includes means for cleaning the light source.

[Show all drawings](#) [Save Result](#) [Open in new tab](#) [More like this](#) [Show mapping](#)

In terms of **displayed information**, each result consists of a box with some metadata, such as the name of the assignee, the ID of the patent document, the publication date and the link to open the patent on Google Patent. In addition, the patent's images are shown.

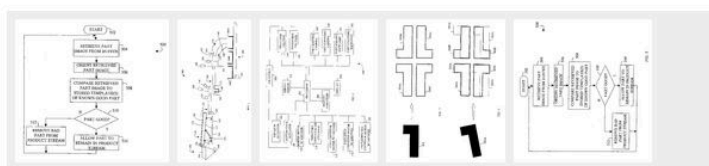


Automated part sorting system

Abstract

A part sorting system for automatically inspecting a plurality of uninspected parts includes a feed conveyor, a sorting camera, at least one rejection valve and a computer system that includes a processor. The feed conveyor receives a plurality of uninspected parts and moves the uninspected parts through an inspection area. The sorting camera captures an image of each of the plurality of inspected parts as the plurality of uninspected parts moves through the inspection area. The rejection valve functions to direct a defective part such that the defective part is separated from inspected acceptable parts. The processor is coupled to the feed conveyor, the sorting camera and the at least one rejection valve. The processor controls the conveyor, the sorting camera and the at least one rejection valve and compares only edge pixels of the captured image to determine whether an inspected part is defective.

Images (5)



Classifications

- G06T7/001 Industrial image inspection using an image reference approach

[View 4 more classifications](#)

Description

[0001] This application is a continuation of U.S. patent application Ser. No. 09/597,946, entitled "AUTOMATED PART SORTING SYSTEM," by Ernest K. Kenneway et al., filed on Jun. 20, 2000, the disclosure of which is hereby incorporated by reference herein in its entirety.

Claims (20)

Hide Dependent 

What is claimed is:

1. A part sorting system for automatically inspecting a plurality of uninspected parts, the system sorting acceptable parts from defective parts, the system comprising:

US20040151364A1

United States

 Download PDF  Find Prior Art  Similar

Inventor: Ernest Kenneway, Falai Li, David Howes

Worldwide applications

2000 · [US](#) 2003 · [US](#)

Application US10/749,642 events

2003-12-31 • Application filed by Kenneway Ernest K., Falai Li, Howes David S.

2003-12-31 • Priority to US10/749,642

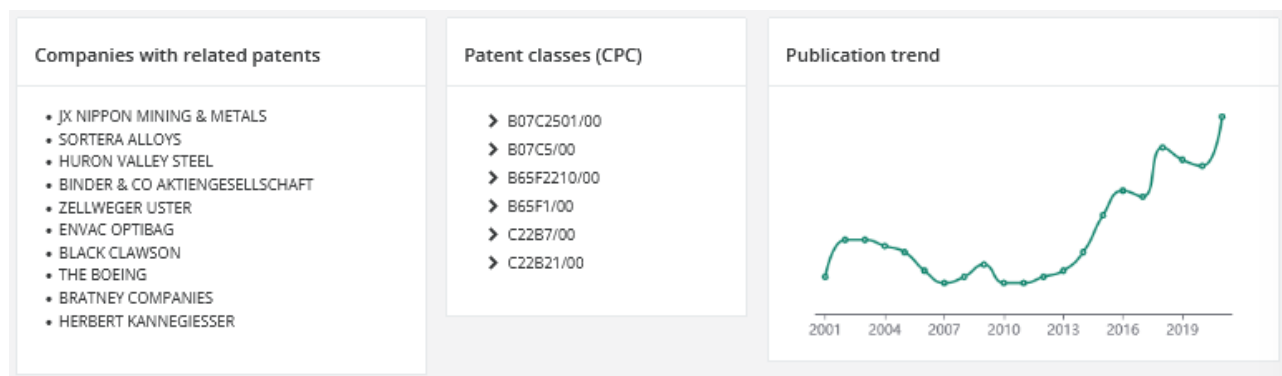
2004-08-05 • Publication of US20040151364A1

Status • Abandoned

Info: [Patent citations \(18\)](#), [Cited by \(33\)](#), [Legal events](#), [Similar documents](#), [Priority and Related Applications](#)

External links: [USPTO](#), [USPTO PatentCenter](#), [USPTO Assignment](#), [Espacenet](#), [Global Dossier](#), [Discuss](#)

For each box, the tool allows some options, such as the possibility to save the document, to open the document in a new tab (the link redirects to Google Patents), to search for similar documents, or to generate a map that associates the keywords in the input query with sentences extracted from the document. Once there is at least one saved result, there is the possibility to download an automatically generated prior art search report (which includes all the metadata for each saved document) or to show the list of all the documents saved.



At the bottom of the web page some analytics such as the most present companies, the principal patent classes (organized in a tree structure), and a publication trend for the past 20 years are illustrated. Such analytics are based on the first 100 patents only.

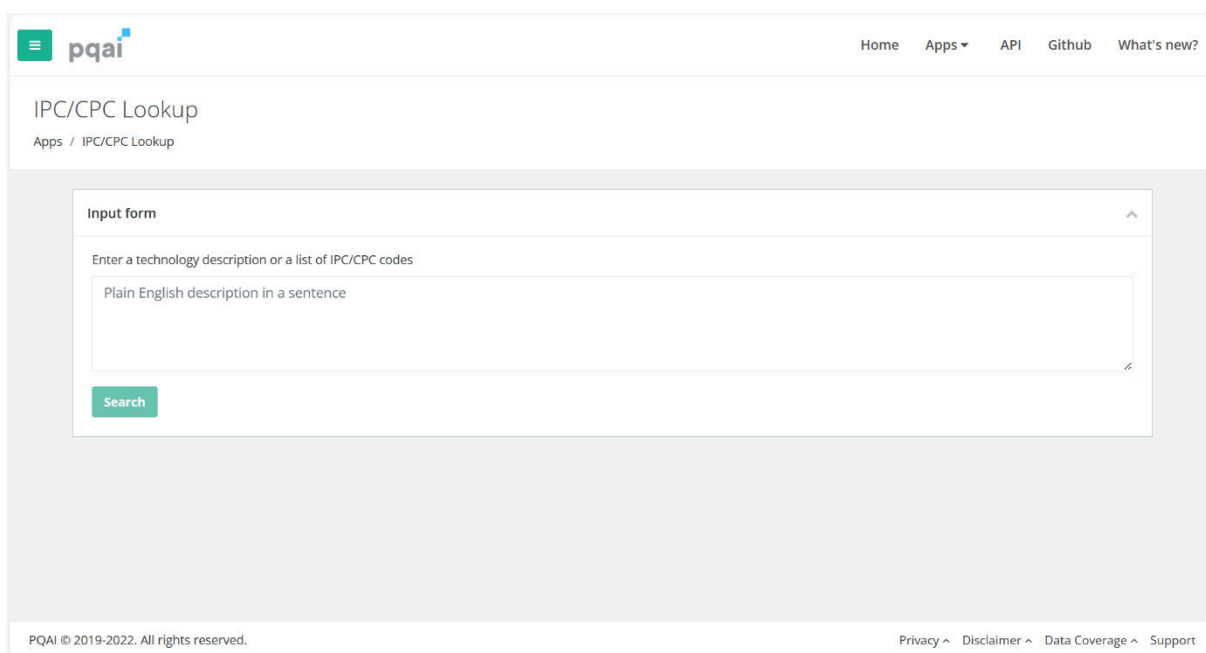
4. Other functionalities – PQAI's APPS

PQAI features several so-called 'Apps', that can support users in specific tasks.

- CPC Lookup
- GAU Predictor
- Concept Extractor
- Similar Words

4.1. CPC Lookup

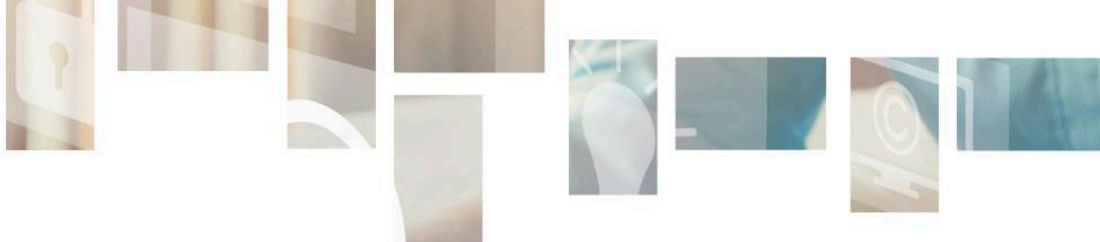
This app can help users find IPC and CPC classes and **can be very useful during the query creation process**. Many IP tools, in fact, feature query syntaxes that allow the use of CPC and IPC classes, that enhance and facilitate the creation of search queries as the need to use long chain of keywords and Boolean operators to express technical concepts is highly reduced. Yet, finding the right CPC/IPC is not easy. Here lies the value of CPC Lookup.



All you have to do is input a brief description of the technical concept you are interested in. The tool's AI engine will process it and provide a list of CPC and IPC classes that suit with the input description.

4.2. GAU Predictor

Starting from a description or a keywords query, the **GAU Predictor** shows the most probable art units and for each of them the citations of the patents and the examiners are provided.

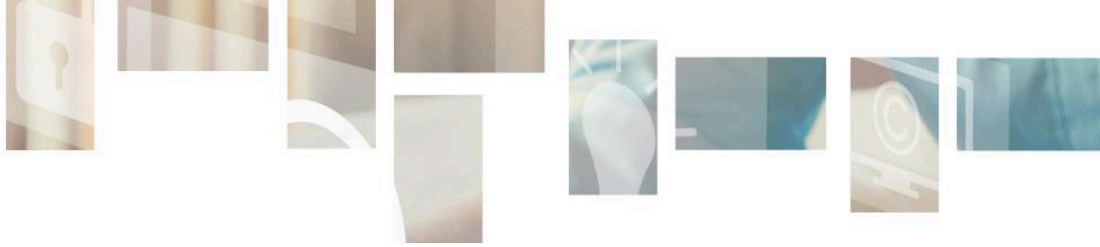



4.3. Concept Extractor

The **Concept Extractor** application generates a list of technical concepts starting from a plain text query as input. **Such features may help users in generating queries by extracting more relevant technical features from a text.**

4.4. Similar Words

The **Similar Words** application provides a list of keywords starting from a target concept that the user can give as input. **Keywords generator might be useful for expanding query** by using alternatives concept and synonyms in order to be more focused searches.



 Home Apps API Github What's new?

Keyword Suggester

Apps / Keywords

Input form

Target concept

Submit

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