

**DEVELOPING A GLOBAL SEARCH UTILITY
FOR ANDROID SMARTPHONES**



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FOR ANDROID SMARTPHONES**

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ABSTRACT

Mobile searching is a developing field of information retrieval services that is centered on the convergence of mobile platforms and mobile phones. It allows the user to retrieve specific information from the phone's memory. In our present time, people have fallen into the smartphone trend. The information graphic of GO-Gulf shows that out of the 5 billion mobile phone users in the world, 1.08 billion are smartphone users, and 46.9 percent of which uses Android smartphones. These numbers have been seen as an opportunity to create a global search application, and given that, this project aimed to develop a search utility for Android smartphone users to even improve the user experience.

The global search application named Global Search, achieved with the use of the linear algorithm, was created to be utilized by smartphone users who own Android devices. The application was designed simply and minimally for the user's convenience, keeping the search bar and retrieved results in one interface. The test users launched the application and keyed in their keywords, and as desired, the application retrieved the particular information that the user wanted to look for and opened the file with its respective default application. Based on the results, the test users find the Global Search application to be efficient and helpful.

Keywords:

Android, metadata, string searching, text-based application

Chapter 1

INTRODUCTION

1.1 Background of the Study

Search engines have become really helpful at the present time; its fast retrieving feature has become really efficient and a great advantage to people, especially those who do not have the luxury to spend too much time in getting files or information from a large archive. Before, we only associate search engines or search utilities with desktop computers, but this kind of situation is a lot more different than what we have right now. If we look around, we always see people glued on their mobile phones and it is no question by now how these people prefer phones over computers since phones are more convenient and portable. Not only that, but our mobile phones today can act as their personal computers what with the emerging technologies flocking the market.

What we call now a smartphone is a mobile phone built on a mobile operating system, with more advanced computing capability and connectivity than a feature phone. The first smartphones combined the functions of a personal digital assistant (PDA) with a mobile phone. Later models added the functionality of portable media players, low-end compact digital cameras, pocket video cameras, and Global Positioning System (GPS) navigation units to form one multi-use device. Modern smartphones also included high resolution

touchscreens and web browsers that display standard web pages as well as mobile-optimized sites. High-speed data access is provided by Wi-Fi and mobile broadband. The most common mobile operating system (OS) used by smartphones today include Google's Android, Apple's iOS, Nokia's Symbian, RIM's Blackberry OS, Samsung's Bada, and Microsoft's Windows Phone.

However, a smartphone's search engine that runs in an Android environment is not really similar to that of a desktop computer, or even the online search engines such as Google, Yahoo!, or Bing to name a few, because it only offers limited areas to perform the searching. By default, Android phones have a search button on the handset. When a user presses this button, the default Quick Search application of Android will open, and this is where the user can enter the search string. You can also enable this search to do much more than just web searches; in fact, you can configure the Android search to show multiple results from multiple sources. To achieve this, the user has to configure the searchable items.

Aside from that, when performing a search in Android smartphones without the help of third party search applications from the different developers, the user still has to go to the Contact interface to look for a person, and the same thing for searching a specific message because the user still has to go to the Inbox interface. In an environment such as Android, the scope of its search engine is rather inadequate to the users' needs that it gives the handlers inconvenience instead of benefits. There may be existing mobile applications which have tried to solve this problem, but their capacity is bounded.

There is no global search feature present in Android that will actually display the list of all possible files or information that the user looks for, more so an application that can search and filter the last date modified metadata of an image. That is why this application applied a text-based index searching in order to cater the need for a global search engine that is capable of looking through the phone's internal and external memory. With the help of some tools, primarily the Android Software Development Kit (SDK), the application has achieved its purpose.

1.2 Technology Application Context

Text-based indexing refers to techniques for searching a single computer-stored document or a collection in a full text database. In this, the search engine examines all the words in every stored document as it tries to match the search criteria with the words supplied by the user. The importance of text retrieval systems has grown dramatically during the recent years due to the very rapid increase of available storage capacity, and one of the factors that is critical for usability of text retrieval systems is the performance of search engine and its underlying indexing techniques.

The Global Search application is running in Android Gingerbread 2.3.3 (API Level 10), and it used Android Software Development Kit (SDK), Android Development Kit (ADT), Eclipse IDE, and Java Development Kit (JDK). The application used the Java as their language, and it also implemented the linear

algorithm in order to successfully retrieve the files and information that the user searched for.

From the application interface, the user inputs a keyword in the search bar, and it then returns the list of possible entries – ranging from the contacts list, the content of Short Message Service (SMS), filenames of media files such as audio, video and images, as well as non-media files namely document and text files. The application can also search and filter the images using its last date modified metadata; when searching through a metadata keyword, the application groups the images into similar months they had been last modified. The, the application retrieves files from both the internal and external memory of the Android smartphone, in which the results are based on the keyword the user has entered. After that, the application shows the result items in one interface. The user can then open the file using its default application.

1.3 Objectives of the Study

The general objective of the study is to create an Android application which can search different contents from the phone's internal and external memory. And thus the specific objectives are as follows:

- a. To provide the user a list of files or information that is closely related to the keyword the user has entered.
- b. To be able to find the best matches among the contents of the phone's internal and external memory.

- c. To access files in from the internal and external memory of the mobile phone using only a single application.
- d. To open the retrieved content to its default application.
- e. Implement linear search algorithm.

1.4 Significance of the Study

The significance of this study is that it provides ease and convenience to the users since they no longer have to browse inside the folders individually. The application is designed in a way that the user will not be confused with regards to the information and files it retrieves. As this is the case, it is capable of achieving the desired results with the minimum use of resources, time, and effort.

1.5 Scope and Limitations of the Study

The following items are included in the retrievable files of the application. Do note that some retrieved file extensions need pre-installed third party applications in order to open them.

1. Filenames of media files specifically audio (mp3, 3gp), video (mp4, mkv) and images (jpg, jpeg, bmp, png, gif).
2. Filenames of non-media files specifically with pdf, doc, docx, ppt, pptx and txt extensions.
3. Metadata of images specifically the date it has been last modified.
4. Contact list of the user.
5. Other installed applications.

6. Content of SMS messages from the user's inbox.
7. Opening of a specific item with its default application.

The following items are not included in the retrievable files of the application:

1. Contents of any document.
2. Content-based image retrieval of images.
3. System files.
4. Other media and non-media files which extensions are not specified above.

1.6 Definition of Terms

Algorithm – is a statement of predefined steps to be followed in the solution of a problem, such as a set of image processing steps (each a mathematical manipulation of the image data) to bring about the desired outcome.

Android – is a software stack for mobile devices that includes an operating system, middleware, and key applications.

Android SDK – is the one that provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language.

Java – an object-oriented and high-level programming language developed by Sun Microsystems.

Keyword – a word that serves as a key; as to the meaning or finding another word, sentence, passage, and the like.

Linear search – a method for finding a particular value in a list that consists of checking everyone one of its elements, one at a time in sequence, until the desired one is found; also called sequential search.

Metadata – a data providing information about one or more aspects of the data.

Mobile application – a term used to describe a software that runs on smartphones and mobile phones.

Search engine – a program that searches documents for specified keywords and returns a list of the documents where the keywords were found.

Smartphone – a mobile phone built on a mobile operating system with a more advanced computing capability and connectivity than a feature phone.

String – a sequence of characters, either as a literal constant or some kind of variable.