Volume

5

YANG'S SCIENTIFIC RESEARCH INSTITUTE, LLC.

PicSeer Cognition Image Search Engine

User Guide

PICSEER IMAGE SEARCH ENGINE

User Guide

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Introduction

*PicSeer is the first cognitive image search engine using **Physical Linguistic Vision Technology**. It provides the real-life ability of translating images into stories and makes it possible to index and search images based on the cognitive "meaning" of images.*

The unique vision processing and understanding platform invented by the chief scientist of Yang's Scientific Research Institute, called *Physical Linguistics Vision Technology*, constitutes the backbone of PicSeer software package for image indexing and searching based on cognitive features; namely, based on the stories told by the images. PicSeer targets the market of Internet Image Search Service Providers, image database indexing and searching, full automation of video annotation, meaning-based indexing and search for large scale image database.

1. For *institutional users*, PicSeer can help categorizing and indexing very large scale image database with millions of images based on meaning full categories such as "images of two cats", "images of a woman whose face is big and eyes are open", "images of a man to the left and a kid to the right and the man holding the kid and the kids wear glasses", etc.

2. For *Internet search service providers*, PicSeer can make the image search over the internet a much more reliable and comfortable experiences to the Internet users.

3. For *individual users*, PicSeer can help to organize, within minutes instead of hours, thousands of images in their hard drivers into the categories they like such as, "my cat and me", "mom and me", "mom and daddy and brother and me".

4. For *law enforcement personals*, PicSeer provides very efficient and fast way to search over large-scale database to match features of suspects such as, "a suspect like fishing", "a suspect having a girlfriend with long hair", "a suspect wear dark frame glasses".

5. For *educational and scientific research communities*, PicSeer can make the searches of the right images for students and researchers from their database an enjoyable experiences rather than an tedious and bored screen-staring status with blank brain!

This document addresses the operations of the demo of PicSeer package. In this demo package, only a small portion of the image base used by PicSeer was included. PicSeer was first released in February 2006 and had been maintained and revised since then by Yang's Scientific Research Institute, LLC.(Yang's Scientific).

There are two kinds of commercial packages associated with PicSeer. The first one is for the ender users and will be licensed to the ender users via a license fee per machine method. The second one is a developer's package to help computer programmers develop their own applications. The demo of PicSeer is free and can be downloaded from the Internet. Refer to the FAQ section of this manual to find the download address.

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Chapter

1

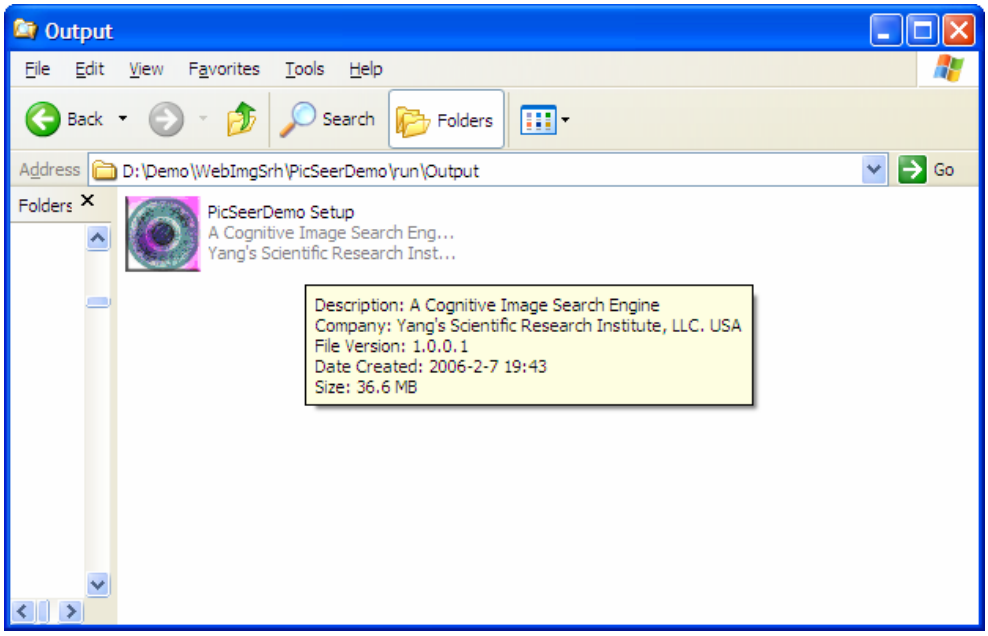
Getting Started

This chapter shows how to install PicSeer into your computer. Since the installation process is a standard one and for the default settings are the only choice for all users, the user can just click "yes" straightforward. The installation interface is highly self-contained, therefore, the user can skip this chapter in case no errors occur during the installation.

To install PicSeer into your computer, please follow the following steps. If you downloaded PicSeer Setup from YangSky's Website, you should go to the download directory. If you install the developer's package from a CD, you should find the installer at the root directory of the installer CD.

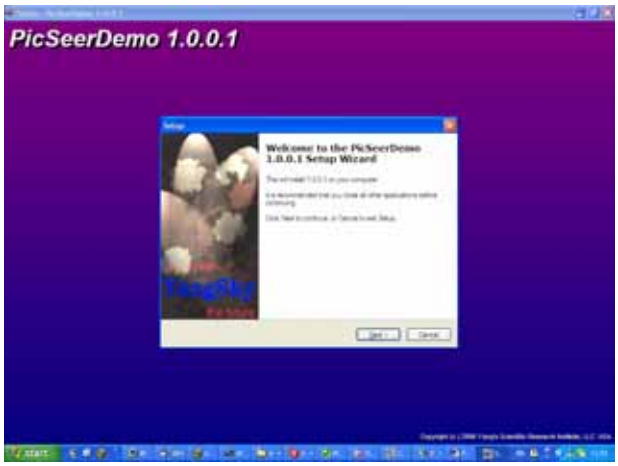
Step 1: Begin to install

Double click the PicSeer Setup icon.



Step 2:

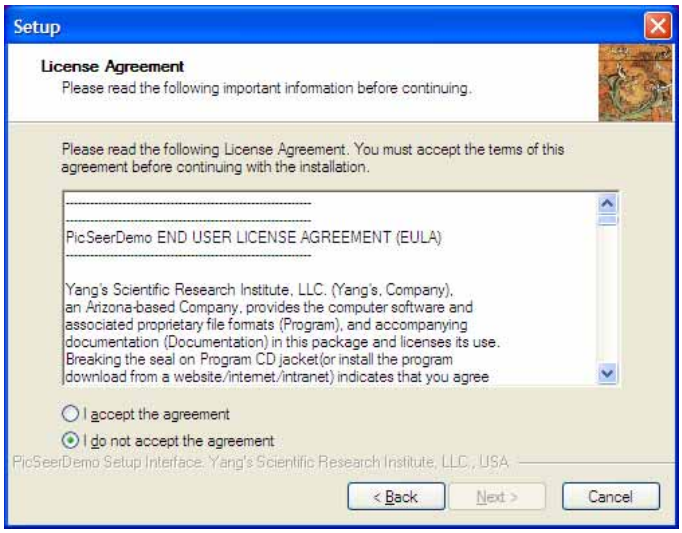
You will see the following interface of the installer.



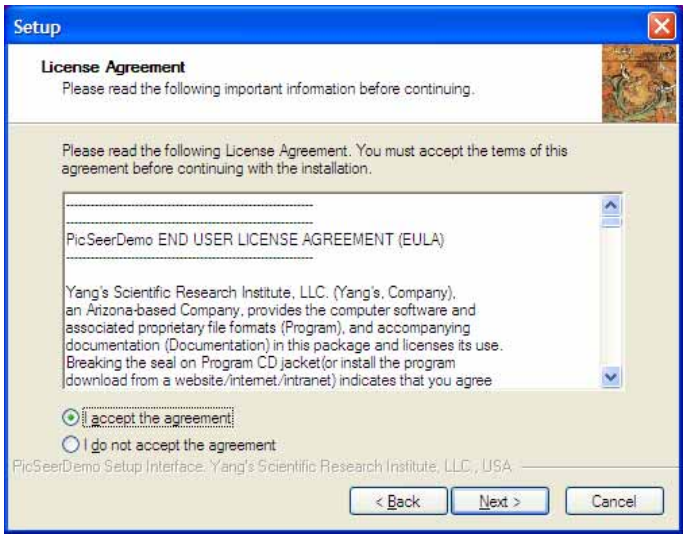
Click Next….

Step 3:

On this page, select the first radio button and then…

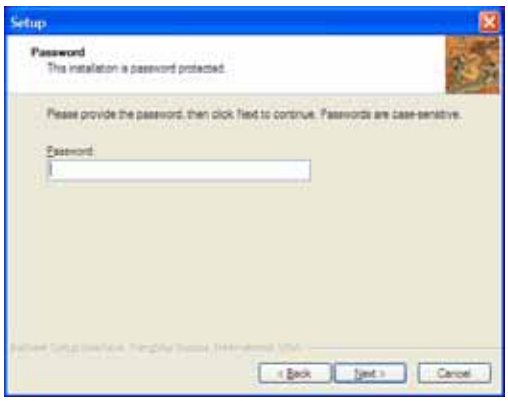


Click Next….

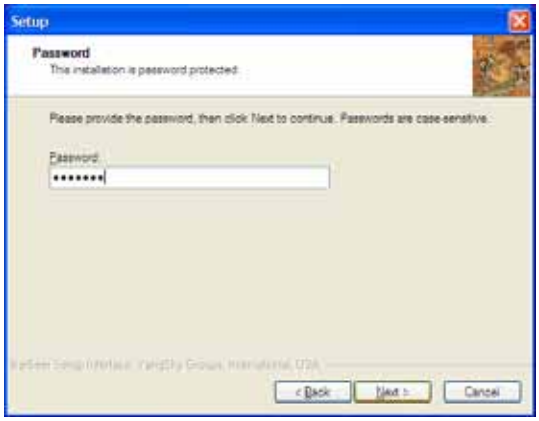


Step 4: (Skipped)

Enter your installing password that you should find it by sending an email to sales@yangsky.com …

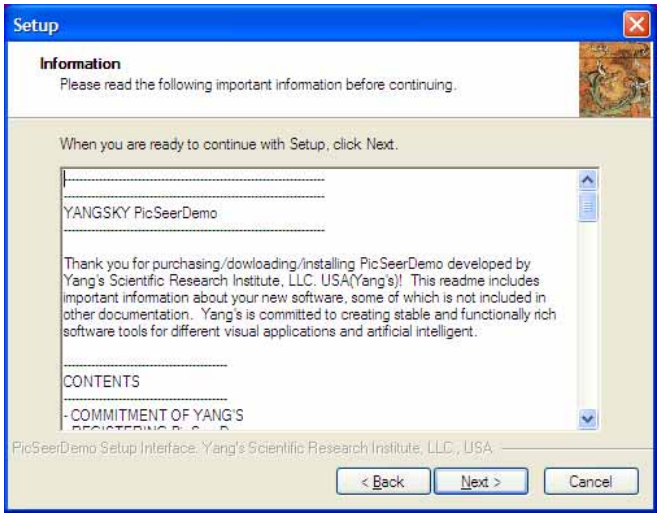


Click Next….

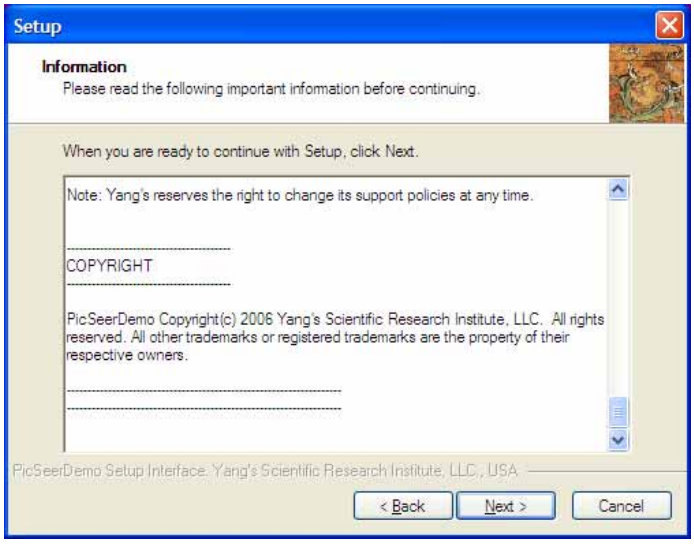


Step 5:

Read through the important information…

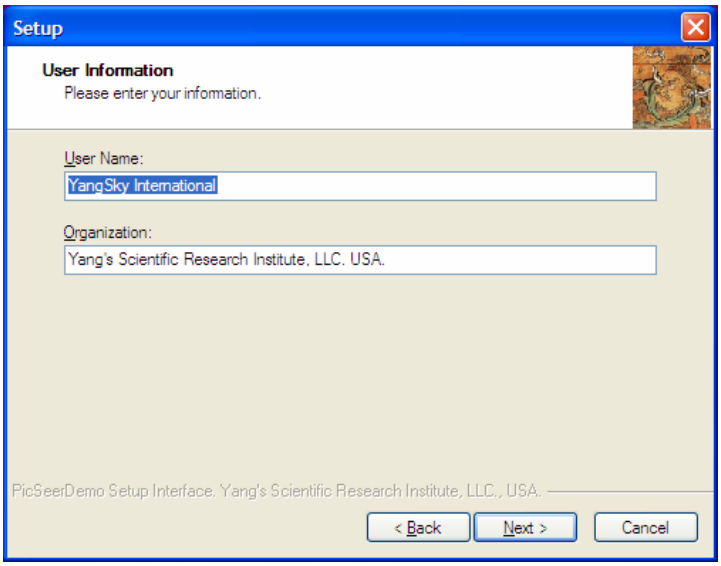


then click Next…



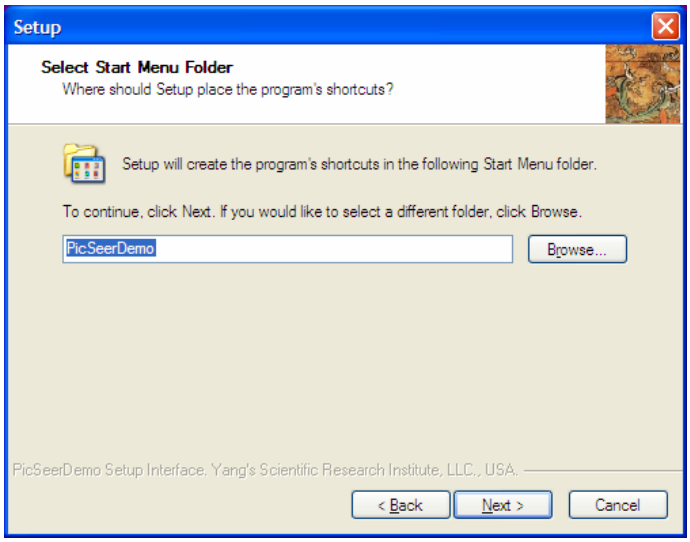
Step 6:

Enter the information(or use the default information) and then click Next

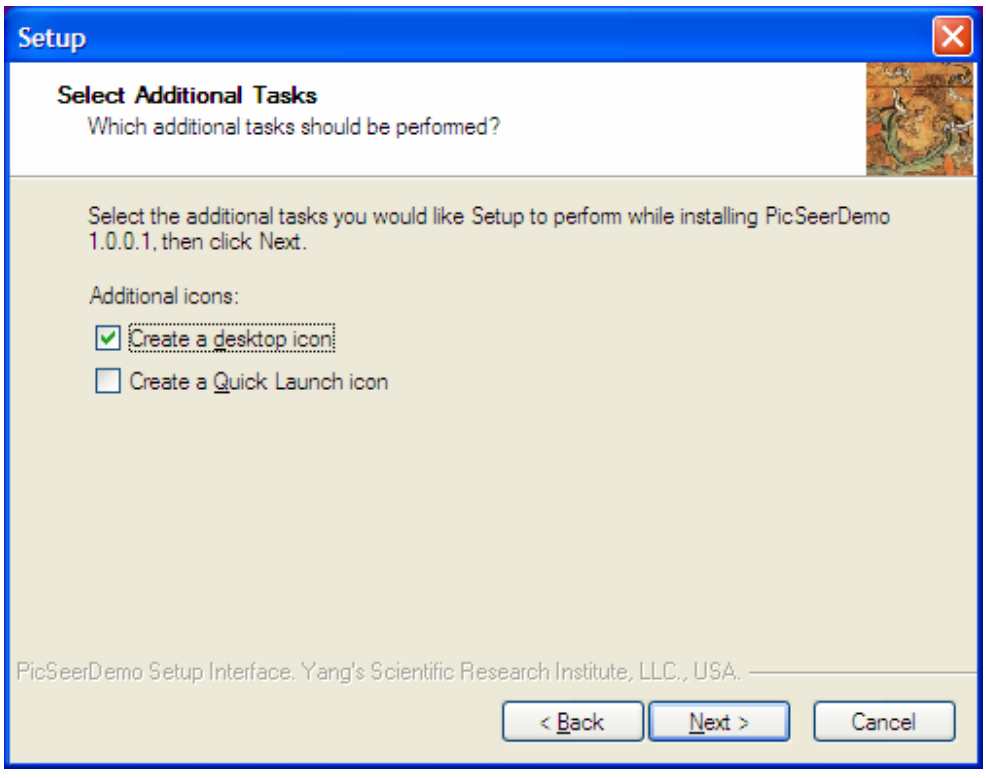


Step 7:

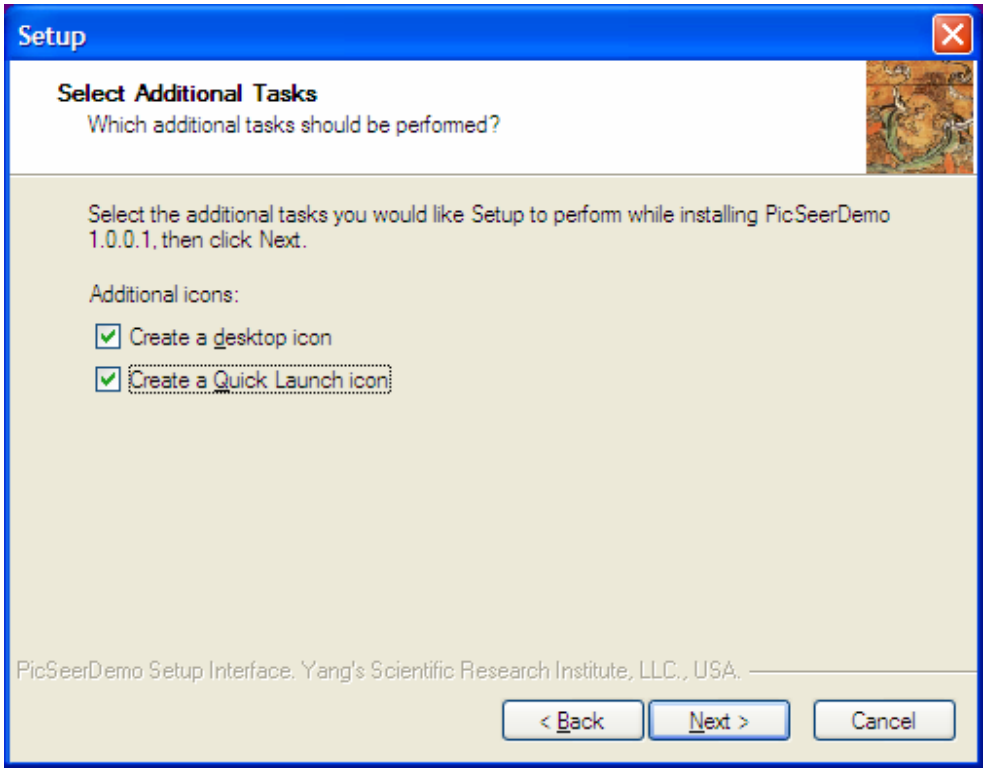
You should not change anything here, rather than click Next



Check both choices to make quick launch links to the PicSeer such that you can easily to locate it from time to time. **WARNING: If you don't check at least "Create a desktop icon" the installation will fail.**

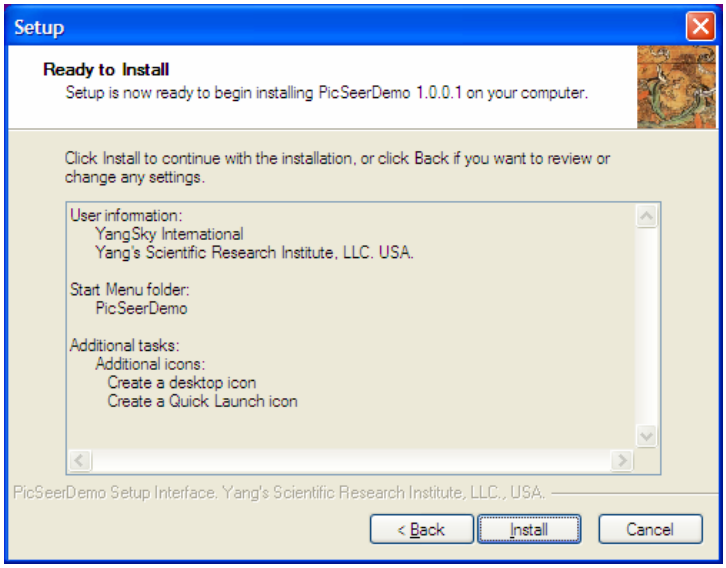


Click Next…



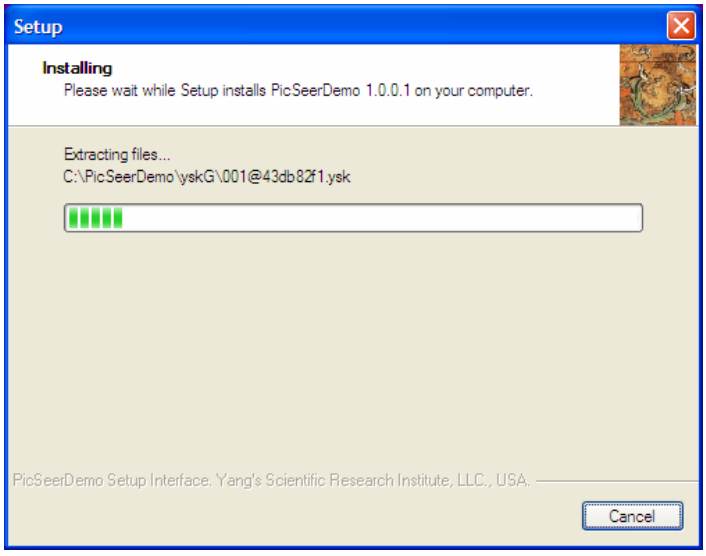
Step 8:

Click install to install these tasks, you can change options by clicking Back.

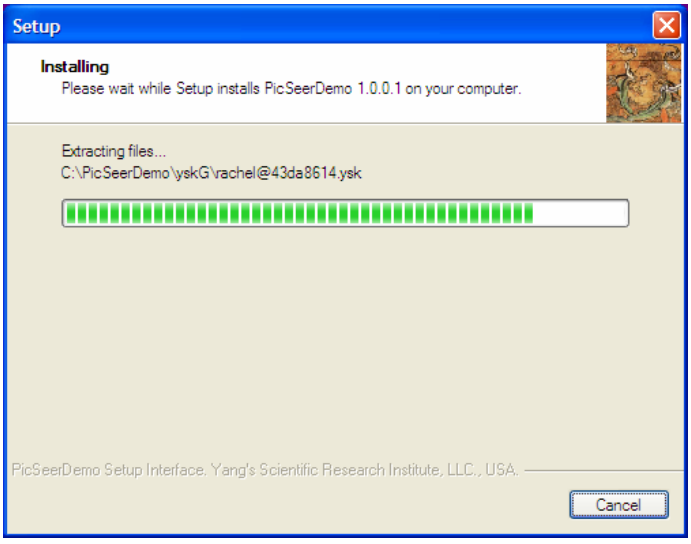


Step 9:

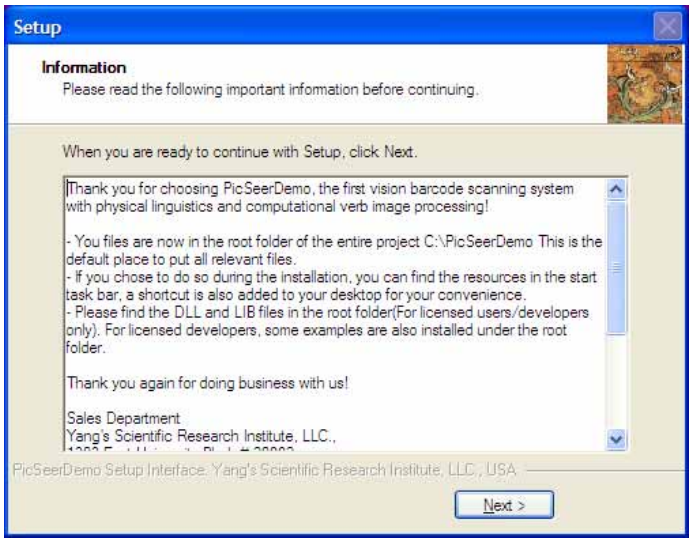
Click Next…



It takes about 5 minutes to 10 minutes to install. The install speed depends on how fast your computer is. In 2 minutes, you might see the following progress.



When it finally finishes, you will get

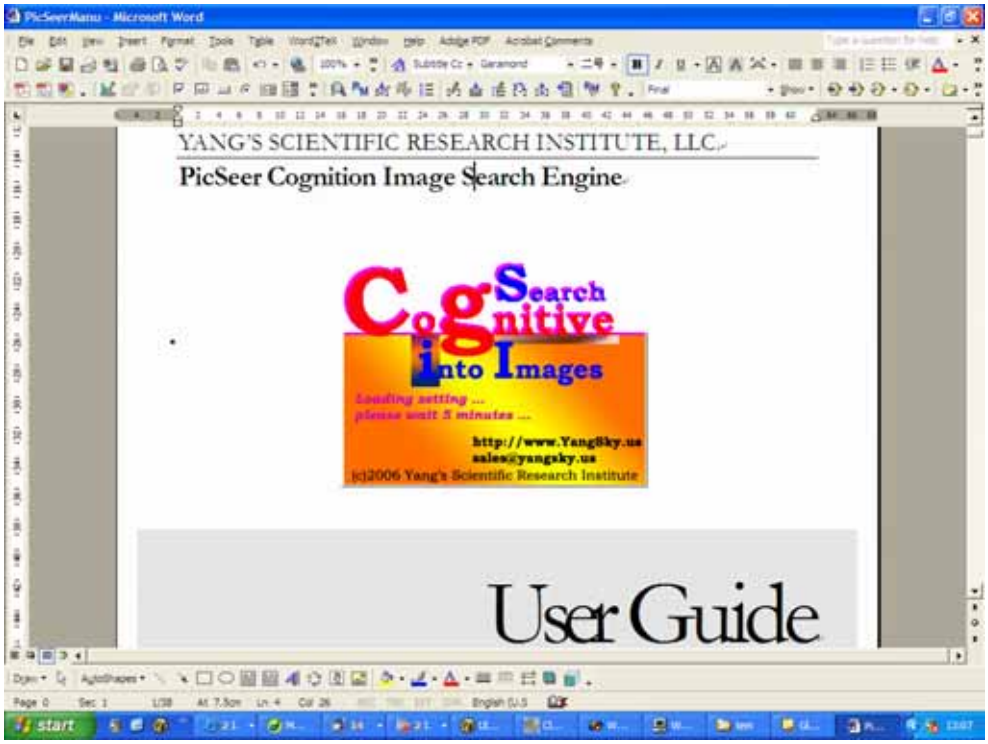


Click Next…

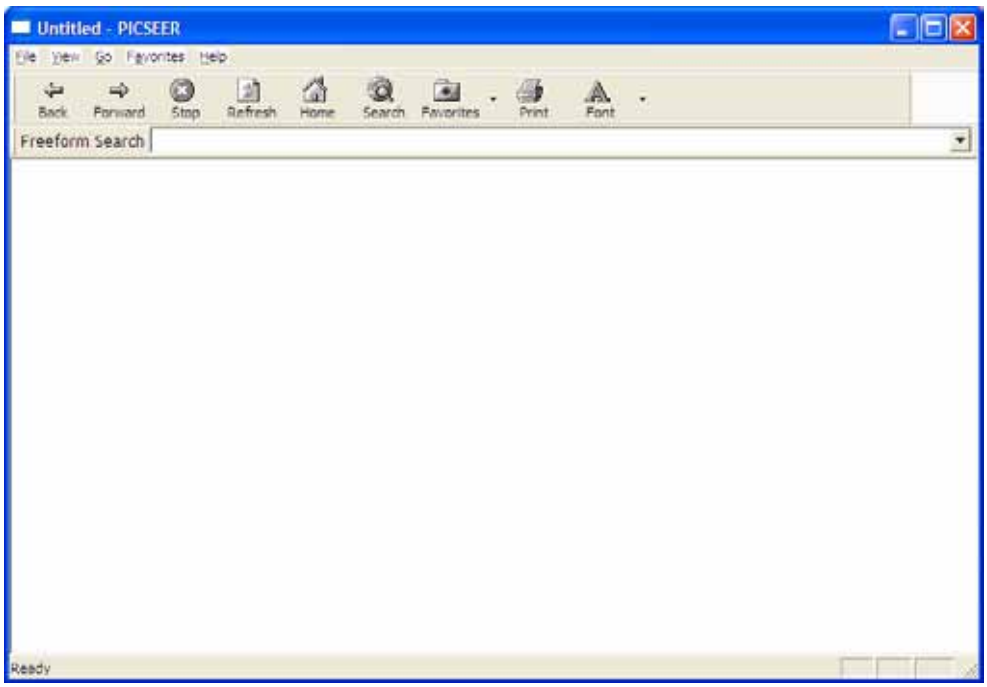
Step 10:

Click Finish to finish the installation and launch PicSeer.

Then the flash screen of PicSeer will be show overlap whatever you have on your desktop as follows



Wait for a while, if you use a slow computer, that while might be 3 minutes, for the PicSeer to load everything it need to begin the image search, then the main interface for the PicSeer will show up as follow.



Yes, the main interface of the PicSeerDemo is pretty much like that of windows explorer. However, the functions have been revised dramatically. The rest of this handbook will show the user how to explore all the search functions the PicSeer.

Chapter 2

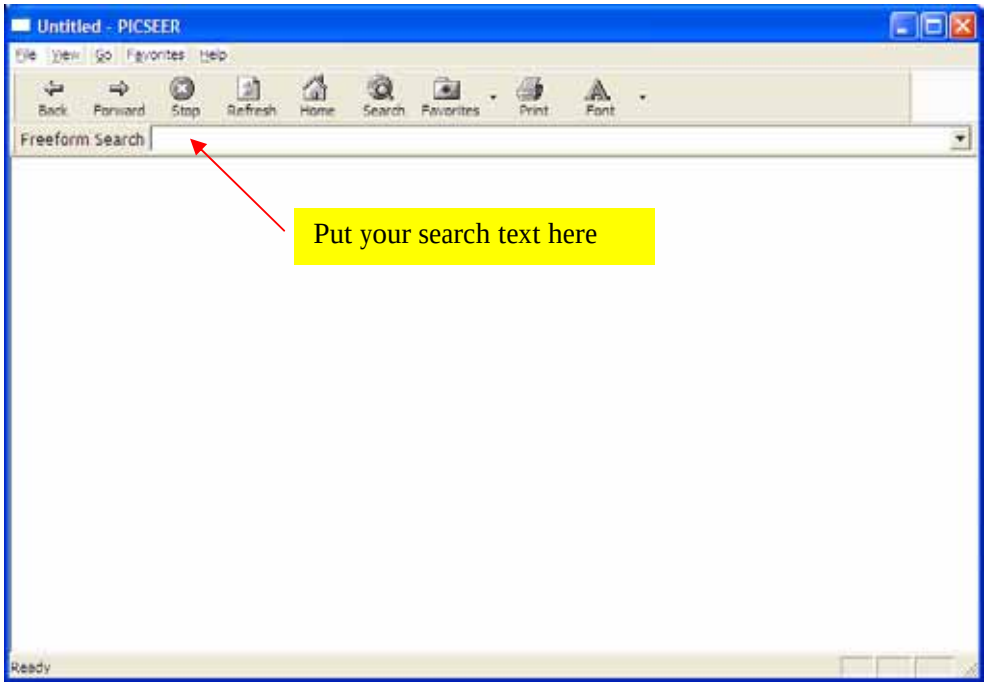
Once Over Lightly

This chapter shows how to begin your first search by using PicSeer. The more advanced search methods will be presented in other sections.

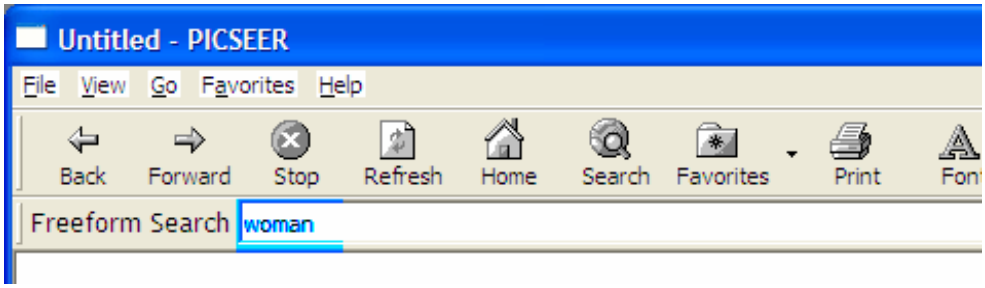
To search images in PicSeer is as easy as to search text in any other search engines on the Internet, all you need to do is to type in the describing texts of the images that you are interested in. The rest will be taken care of by the intelligent and cognitive image-to-story engine built in the PicSeer. Let us to explore the world of PicSeer step by step.

Your First Search with PicSeer

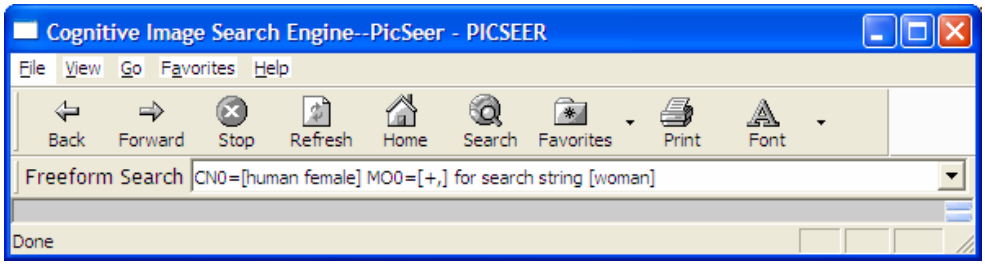
The standard interface of the PicSeer demo package is shown as follow:



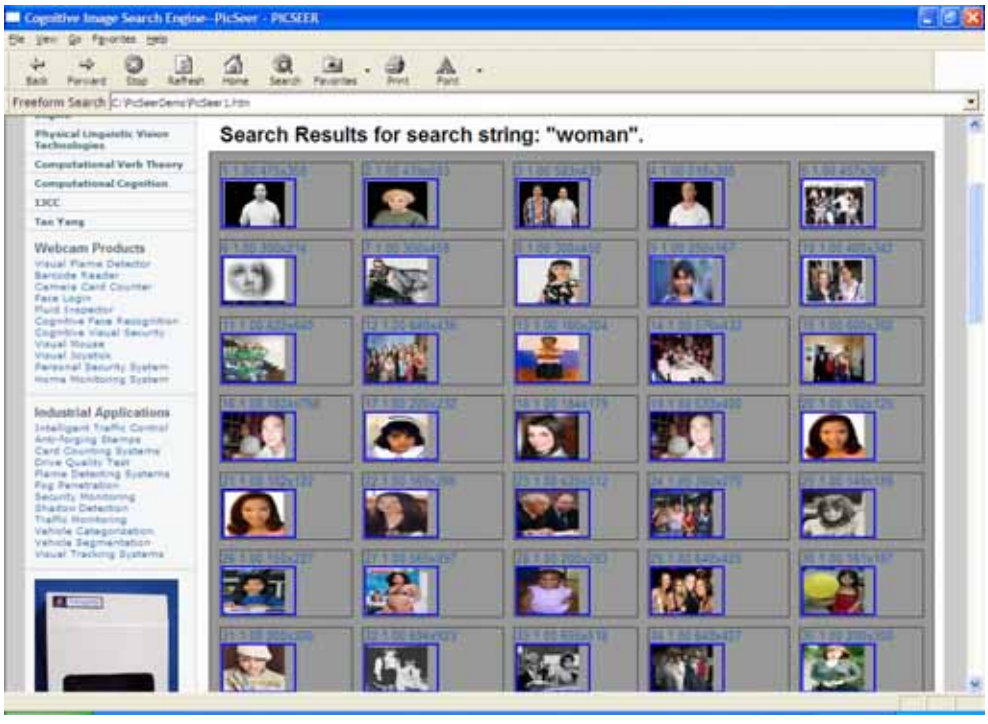
The freeform search bar is where you put your search phase in. Let us search woman pictures from the PicSeer, we can type the word “woman” at the search bar as shown in the following screenshot:



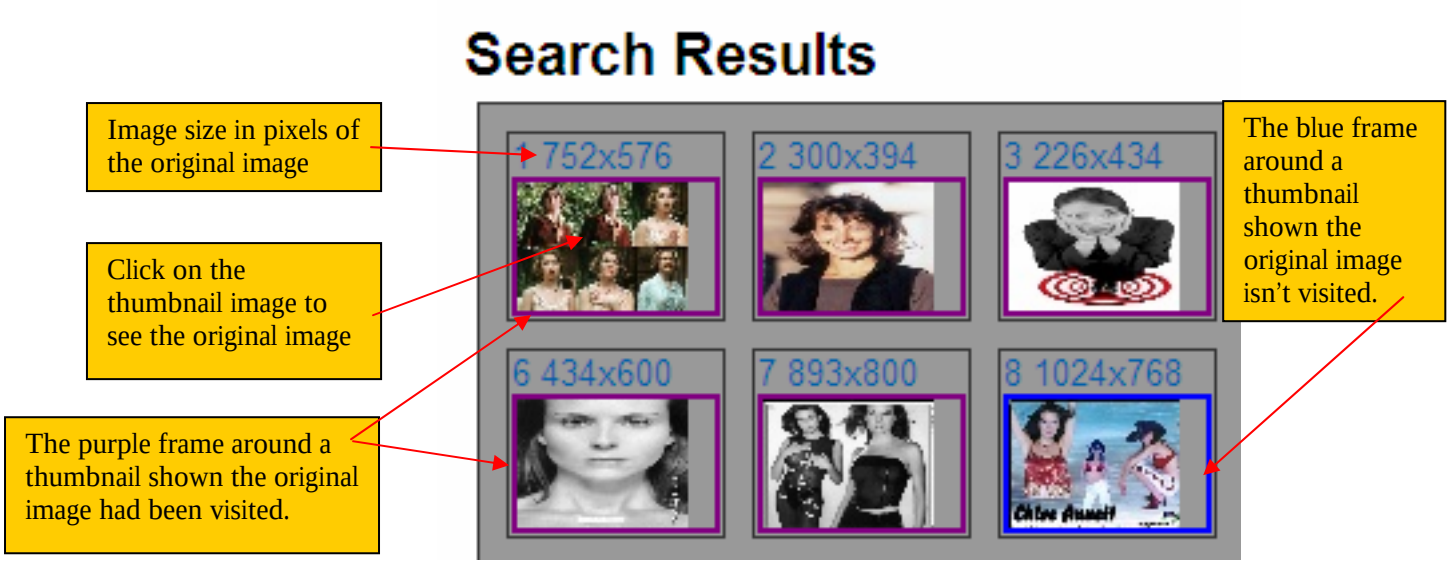
After hit the “Enter” key and before the search results showing up, the following screen will be there fore a while. This screen shows that PicSeer is processing your search text and translates it into the normalized form in physical linguistics.



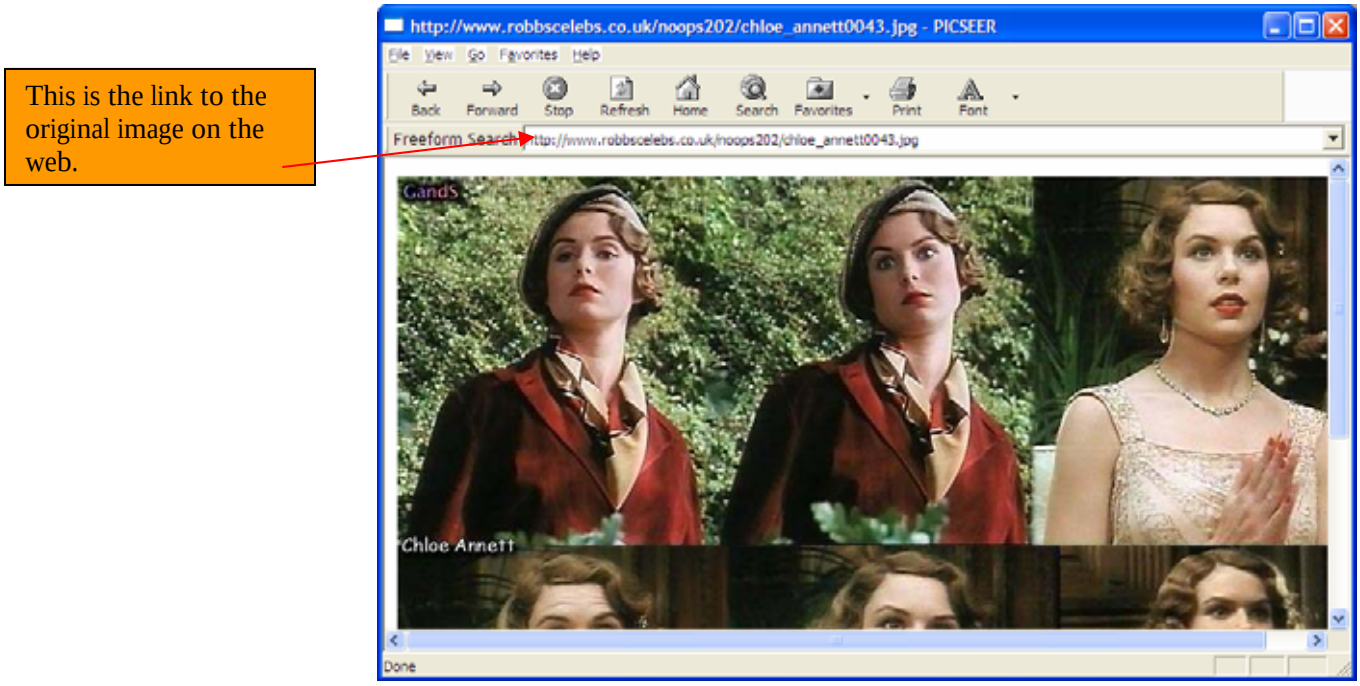
Depends on the speed of your computer and the current CPU load, after a while the following screen containing the search results will show up.



The search result presents 100 thumbnail images, 6 thumbnail images are enlarged as follows.



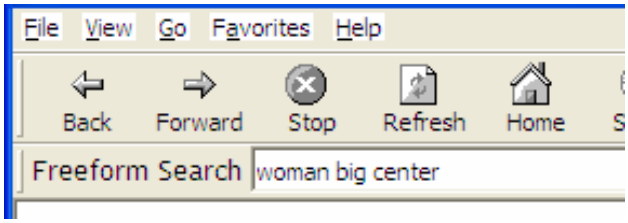
If you want to visit the original image on the internet, make sure that your computer has the right connection to the Internet and PicSeerDemo.exe is not blocked by your firewall. By simply click the thumbnail, PicSeer will download the original image for you. For example, let us click the first thumbnail, the original image is shown as follow.



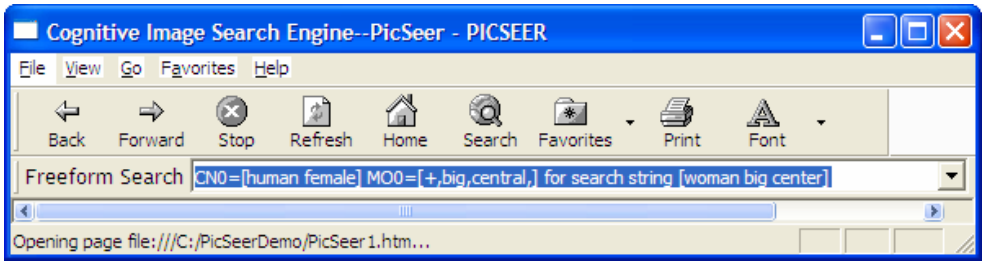
Please note that since the searching database for images used by PicSeer is keeping growing all the time, your search results with the same search text might vary for different versions of PicSeerDemo.

Narrow Your Search Range

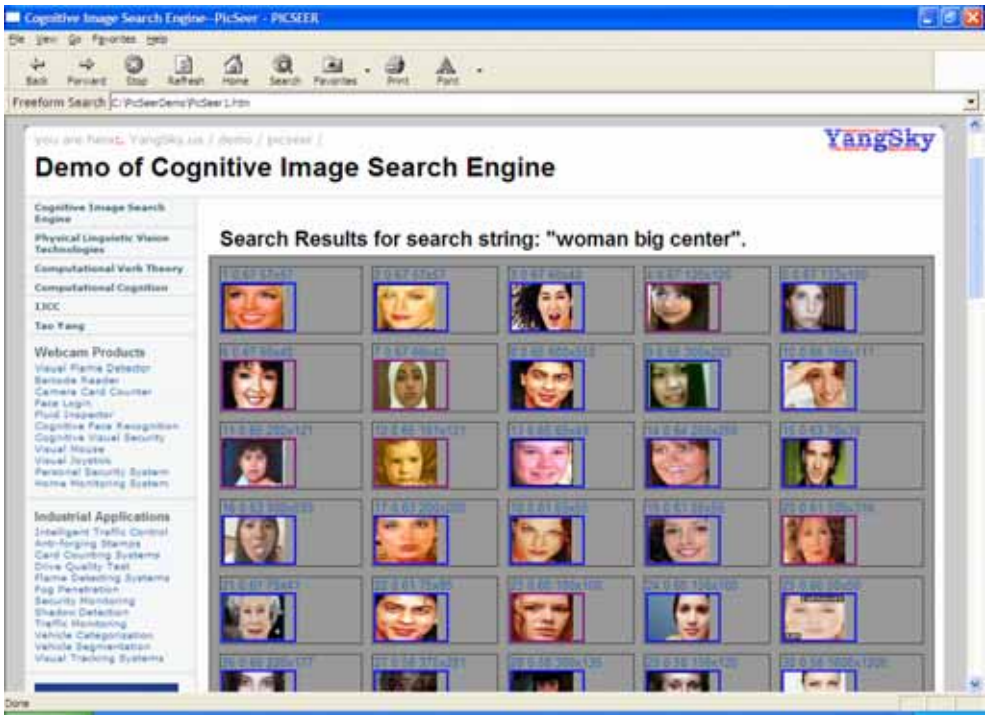
To search a very general phrase such as "woman" doesn't provide the specific information we needed. PicSeer provides a simple way to narrow the search range very much similar to what we always do in daily life; namely, use more words to target a more precise search range. For example, if we want to find all woman images with the ID-photo like configurations, we can use the search phase like "woman with big face and centered in the image". To make life easier, you can just simply type the search phase as follow



After hitting the "Enter" key, we get the following waiting screen



You don't need to understand the information provided by the message shown on the search bar right now, we will address the meaning of this sentence late. Based on the speed and the workload of your computer, waiting for a while, the following search results will be shown



For different versions of PicSeer demo, the results shown will be different because PicSeer is actively evolving in a daily base.

Advanced Search Skills

PicSeer provides an easy search syntax to help users to search images with different kinds of specifications. The syntax follows a freeform search string format together with two symbols +(plus) and –(minus). To see the following example to get the feelings of PicSeer syntax.

Example 1.

To search: A *woman* showing big face in image and her face *color* is white

Freeform search string: *woman* big face + *color* white

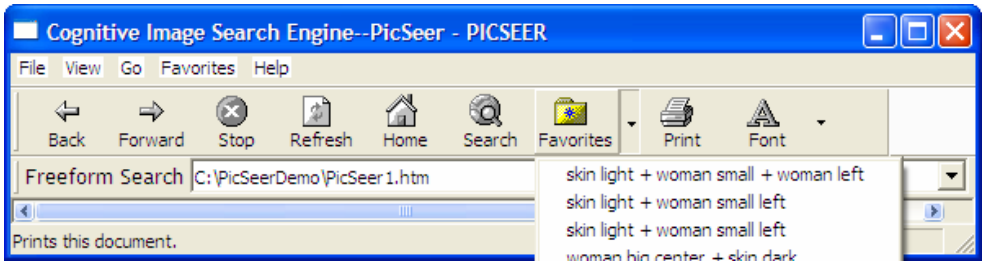
Example 2.

To search: A *woman* showing big face in image and her *face* color is white and her *eyes* are not blue.

Freeform search string: *woman* big face + face white – eye blue

Note: the "–(minus)" doesn't included in the version 1 of PicSeerDemo and not in the PicSeer Alpha.

Let us take some looks at the difference of the orders of the search string. Click on the "Favorites" drop-off manual to find a list of prescribed search strings as the skeleton that you shall work with, these search strings are very much described the abilities of each version of PicSeerDemo and therefore we expect this list to grow along the time.



Let us choose the search string

A1 "*skin light + woman small + woman left*",

we get the following search results

Then let us choose the following search string from the "Favorites" drop-down list

A1 "*skin light + woman small left*",

we get the following search results

Observe that the search results are the same.

However, when we use the search string

A3 "*woman small + woman left + skin light*",

We get

Observe that the scores for all images changed and the order of this list was also changed as show by the last two images at the right-bottom. The reason is that the PicSeer uses a First-In-the-Most-Important(FIMI) syntax for its search strings.

Refine Search Results

The FIMI syntax is one of the powerful tools provided by the freeform search technology developed within PicSeer. It mimic the virtual infinite flexibility of human language system and provides the users with many ways to refine the search results. The user can try the following searching strings to practice this kind of syntax.

A4. "*woman center + skin dark*":

A5. "*skin dark + woman center*"

Observe that the results for both A4 and A5 are different in many way. The reason is that in A4, we put more weight on "a woman at the center of the image" than "a woman has dark skin" while A5 put the search emphasis in the other way around.

We shall address more about this topic late on.

Add Your Own Favorites

To easy to your life and to avoid typos that current can not detected by PicSeerDemo, PicSeer provides a way to organize the favorites of the search strings by the users. Just go to the folder "C:\PicSeerDemo" and open the file "favorites.txt" using any plain text editor. When you open "favorites.txt" you most likely will see the following default favorites:

woman big center + skin dark

skin light + woman small + woman left

skin light + woman small left

woman big + woman center

woman center + woman big

skin very chinese + woman small left

color very black + girl small + woman center

color very black + skin white + skin very dark + woman very big

Observe that the order of these favorites will be re-organized once they are loaded by PicSeer, therefore, the order in the file is not important, you can add your favorites to the end of the list.

Combined Searches

In many occasions the user wants to find a picture where combinations of two or more kinds of objects appears. For example, if the user wants to find images of someone taking a picture with a panda, then it might be a good idea to search the "a person and a panda in the same picture". PicSeer provides a way to search the combination of two or more objects in the same phone. In this case, the user can input the following search string

"*people panda*",

which returns the following result

With a very small image base with less than 2 million images, there are a few images where people and panda appear. From the enlarged picture of the first three query results one can see that

1. PicSeer does put high scores to images where people and panda both appear.

2. The pandas, which are either real or artificial and with different poses can be detected by PicSeer.

3. The third picture reveal and interesting result where a woman wear a cloth on which an image of panda was printed in pink ink. This show the ability of PicSeer can detect Panda and people in any colors.

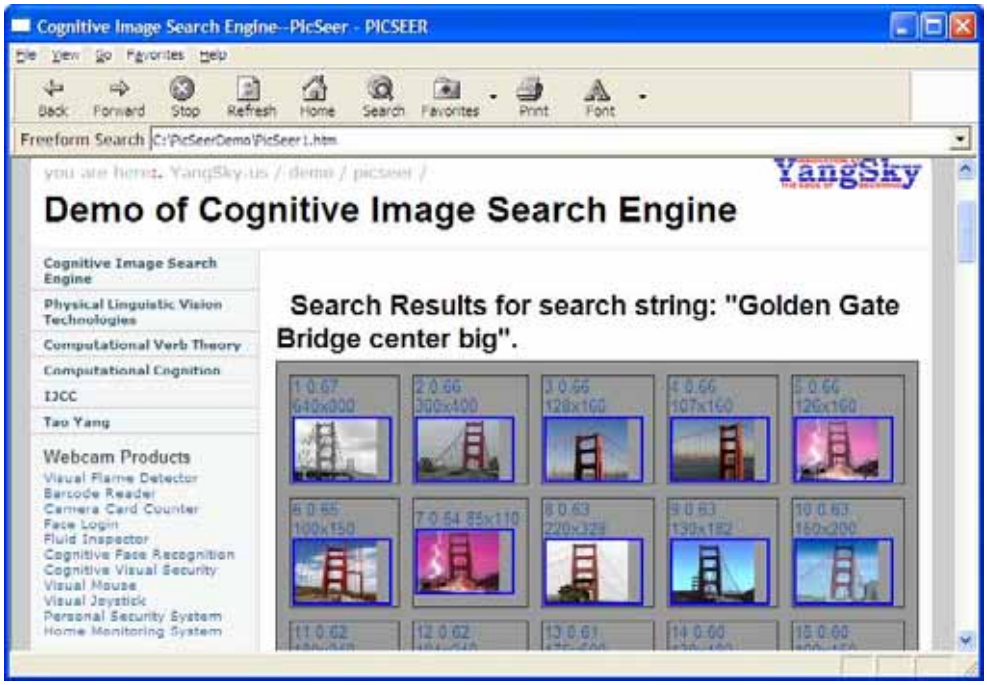
You can also put the position, color, size and many other descriptions into your search text, for example, if you want to search image with people and panda and some then relatively to the left, the search text can be

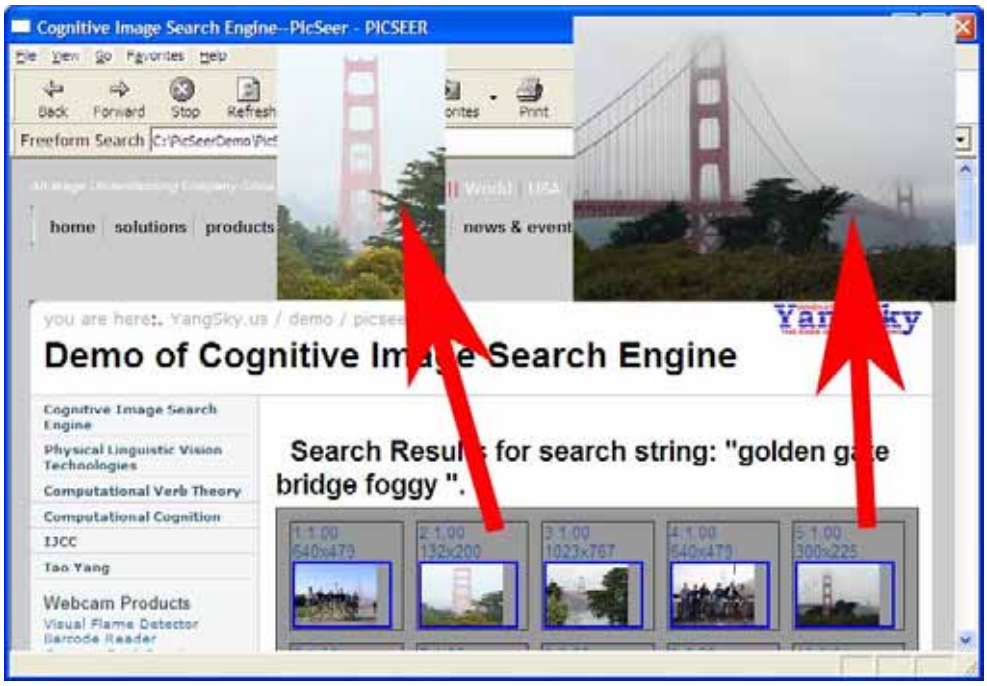
"*person panda left*"

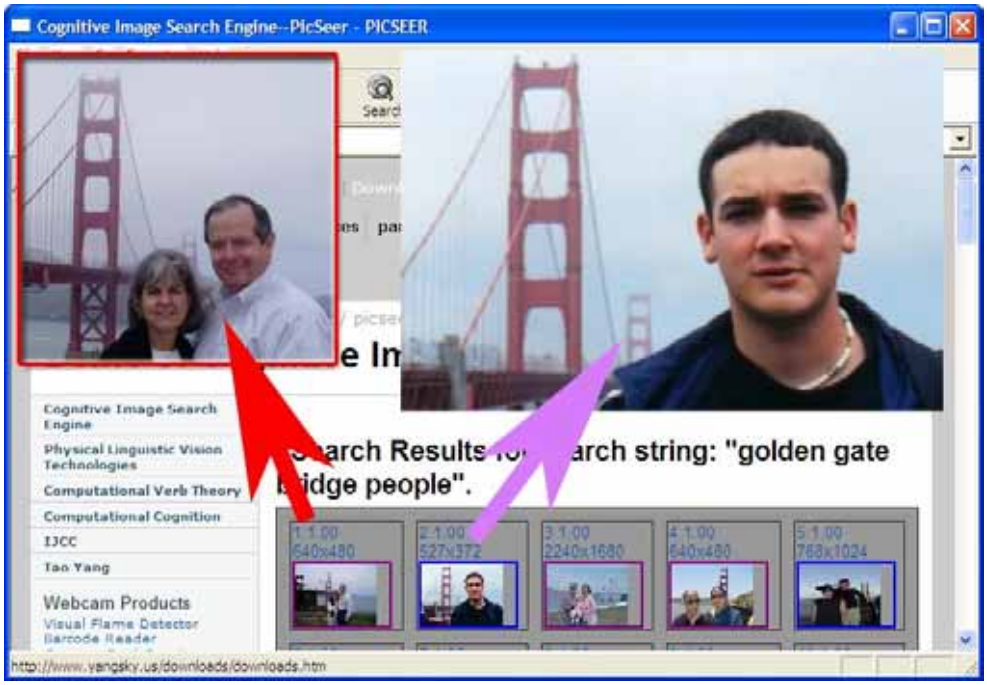
and the query result is as follow. Observe that this time a new result returned and took the fifth place showing a girl feeding panda puppies. The 1 to 4 places are the same because there are people to the left of the images.

Golden Gate Bridge

Few search results related to Golden Gate Bridge are listed as follows.




Cognitive Image Search Engine--PicSeer - PICSEER
Freeform Search
home
solutions
products
Demo of Cognitive Image Search Engine
Cognitive Image Search Engine
Physical Linguistic Vision Technologies
Computational Verb Theory
Computational Cognition
IJCC
Tao Yang
Webcam Products
Visual Flame Detector
Barcode Reader
Search Results for search string: "golden gate bridge foggy ".


Cognitive Image Search Engine--PicSeer - PICSEER
Cognitive Image Search Engine
Physical Linguistic Vision Technologies
Computational Verb Theory
Computational Cognition
IJCC
Tao Yang
Webcam Products
Visual Flame Detector
Barcode Reader
bridge people".
http://www.yangsky.us/downloads/downloads.htm


Cognitive Image Search Engine--PicSeer - PICSEER
Freeform Search
YangSky
Demo of Cognitive Image Search Engine
Search Results for search string: "golden gate bridge ".
Webcam Products
Industrial Applications

Pandas

Few search results related to panda are listed as follows.

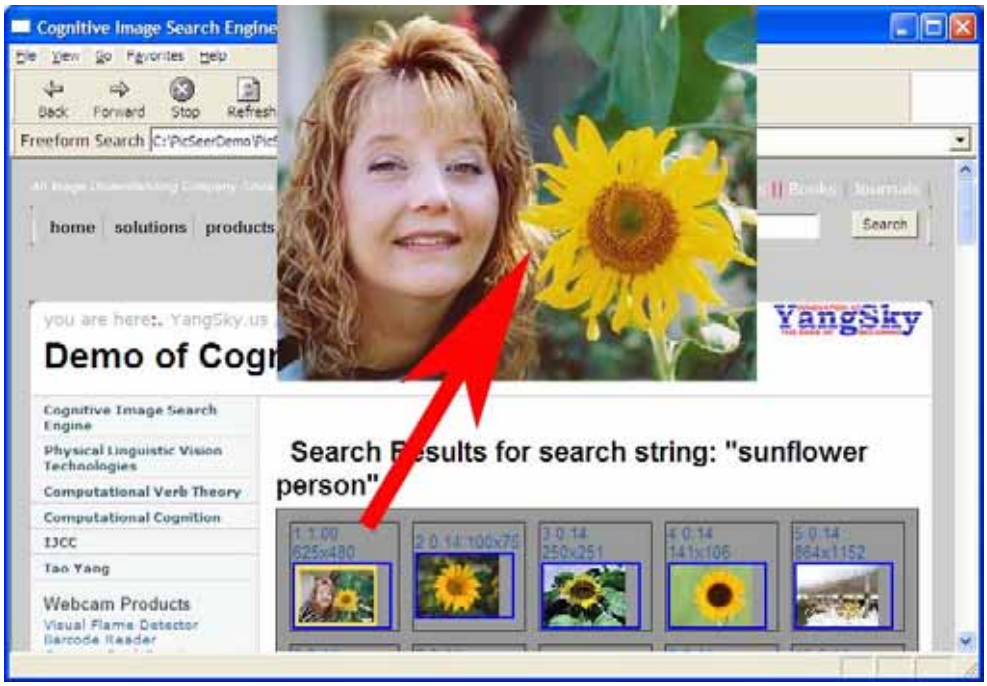

Cognitive Image Search Engine--PicSeer -
File View Go Favorites Help
Back Forward Stop Refresh Home
Freeform Search C:\PicSeerDemo\PicSeer1.htm
home solutions products services
you are here:. YangSky.us / demo /
Demo of Cognitive
Cognitive Image Search Engine
Physical Linguistic Vision Technologies
Computational Verb Theory
Computational Cognition
IJCC
Tao Yang
Webcam Products
Visual Flame Detector
Barcode Reader
Search Results for search string: "person panda left ".


Cognitive Image Search Engine--PicSeer - PICSEER
File View Go Favorites Help
Back Forward Stop Refresh Home Search Favorites Print Font
Freeform Search C:\PicSeerDemo\PicSeer1.htm
Physical Linguistic Vision Technologies
Computational Verb Theory
Computational Cognition
IJCC
Tao Yang
Webcam Products
Visual Flame Detector
Barcode Reader
Camera Card Counter
Face Login
Fluid Inspector
Cognitive Face Recognition
Cognitive Visual Security
Visual Mouse
Visual Joystick
Personal Security System
Home Monitoring System
Industrial Applications
Intelligent Traffic Control
Anti-forging Stamps
Card Counting Systems
Drive Quality Test
Flame Detecting Systems
Fog Penetration
Search Results for search string: "panda big center".


Cognitive Image Search Engine--PicSeer - PICSEER
File View Go Favorites Help
Back Forward Stop Refresh Home Search Favorites Print Font
Freeform Search C:\PicSeerDemo\PicSeer1.htm
you are here: YangSky.us / demo / picseer /
YangSky
Demo of Cognitive Image Search Engine
Cognitive Image Search Engine
Physical Linguistic Vision Technologies
Computational Verb Theory
Computational Cognition
IJCC
Tao Yang
Webcam Products
Visual Flame Detector
Barcode Reader
Camera Card Counter
Face Login
Fluid Inspector
Cognitive Face Recognition
Cognitive Visual Security
Visual Mouse
Visual Joystick
Personal Security System
Home Monitoring System
Search Results for search string: "panda dirty".

Sunflowers

Few search results related to sunflower are listed as follows.




Cognitive Image Search Engine--PicSeer - PICSEER
Freeform Search
home
solutions
products
services
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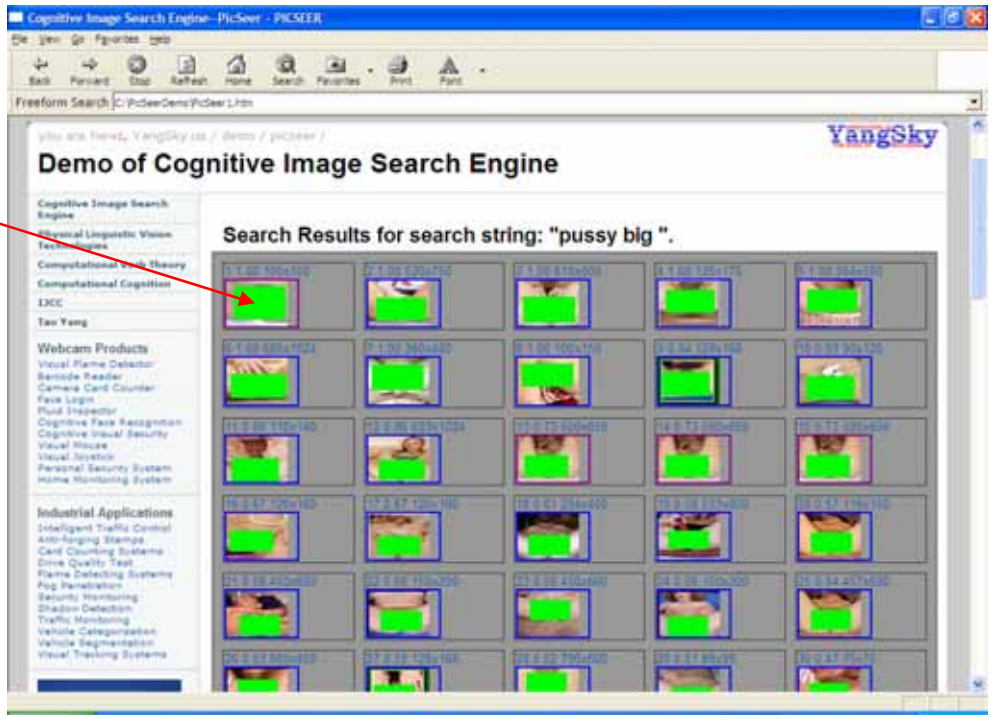
Smart Porn-Detection

Warning: This section contains explicit words and blocked explicit pictures due to its research purpose. We reduced to user from expose to these explicit contains to a minimum level. However, if you think it shall offensive, please skip this section.

Comparing to other porn-detecting software, where skin tones and the image titles are used to block the entire explicit images, PicSeer only block the portion with explicit contents within the images and keep the other part of images untouched, the following is the search results of freeform search string

"*pussy big*"

PicSeer generates smart blocking regions in green

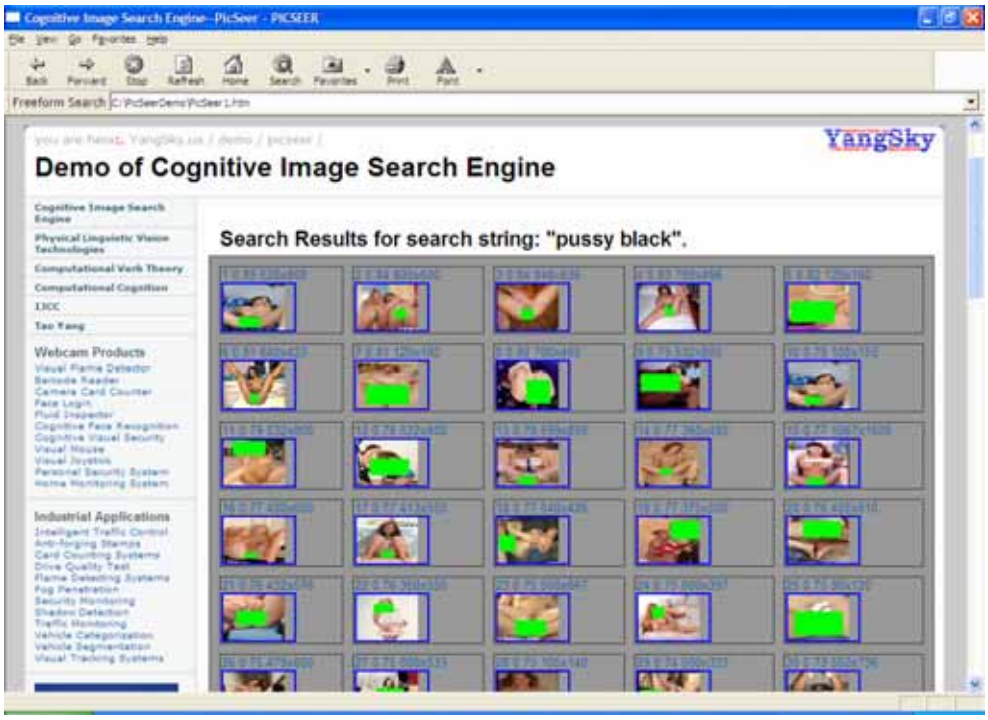


PicSeer automatically generates smart blocking regions to block explicit contents within an image. The green regions are generated by PicSeer as shown.

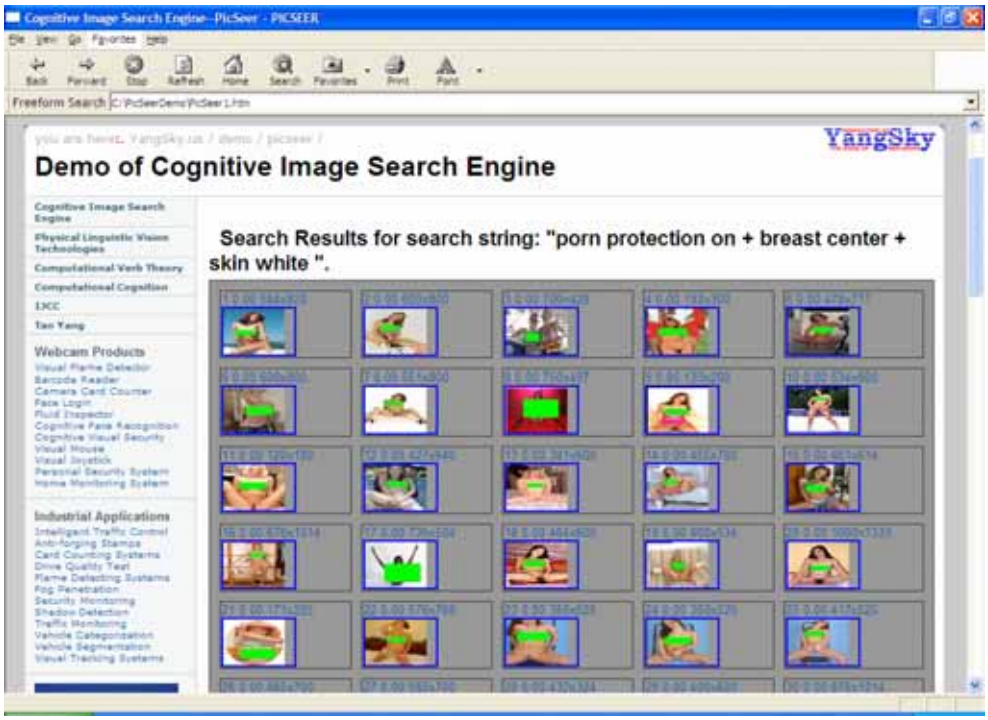
The following is another screenshot to show how the porn-detecting system in the PicSeer is unique. The freeform search text for this search is

"*pussy black*"

As expected, the results are return with dim skin color and the explicit regions within these images are screened out by solid green regions as well.



The same kind of porn-filter also work for search string like "*porn protection on + breast center + skin white*" shown in the following screen shot. Again, the green blocking regions were generated automatically by PicSeer in real-time.



3

Troubleshooting

This chapter shows how to resolve some common issues that might come across when using PicSeer software to search and indexing images from either static image or from a USB camera connected to your computer. Please note that the PicSeer Demo don't support image scan and USB camera, therefore the user of demo version don't need to read through this section.

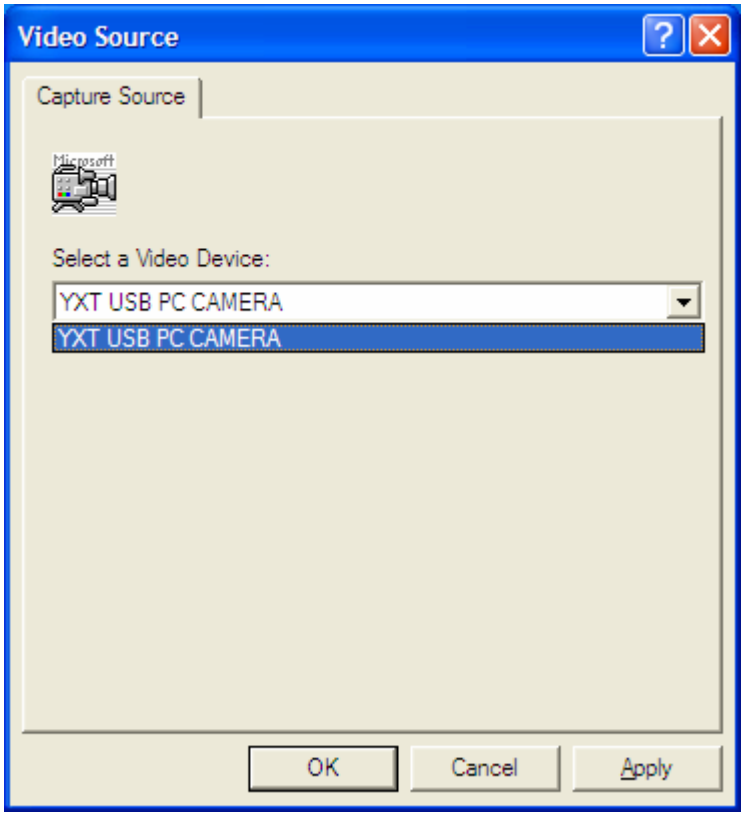
To explore the full ability of the PicSeer, the working conditions of the entire system including your PC, the webcam and PicSeer should be considered comprehensively. The quality of captured image frame will have critical influence to the final readings. The following are some tips for operating PicSeer.

- Hold you webcam using some a stable support. A steady webcam is much easier to focus on the barcode.
- Never put your barcode vertically under the webcam.
- Soft and indirect lighting sources help webcam read clear barcode images.

In case that you have some problems, the followings should be useful tips.

Webcams Are Busy

After you start the PicSeer, if you see the following "Video Source" dialogue interface, it is most likely that your webcams are used by some other applications such as Internet chat software or video conference software, etc. ***To solve this problem, you need to either choose an available webcam from the list, or release the webcam from other software.***



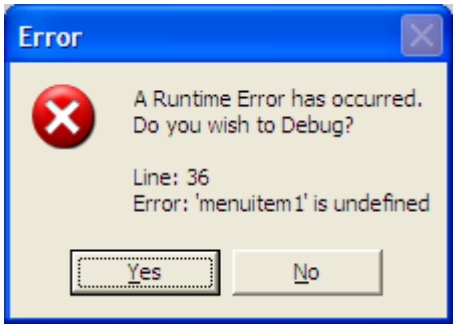
No Webcam Can Be Used

The following dialogue interface tells that PicSeer failed to initialize a webcam. To solve this problem, be sure to

- Check whether any webcam connected to USB ports of your computer.
- Check whether webcams are used by other software.
- Check whether webcams function well or not.

No Menuitem1 Warning

For some search results there will be a debug info because the script of the generated webpage is not right, just NO.


Error
A Runtime Error has occurred.
Do you wish to Debug?
Line: 36
Error: 'menuitem1' is undefined
Yes
No

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FQAs

This chapter includes the FQAs concerning all issues of PicSeer.

To run PicSeer you don't need to be an expert of either image processing or webcam, it is as simple as using your webcam for teleconference. However, since a computer with a webcam is not as that simple as we first thought in many occasions, some tips are listed in this chapter you ease your experience with PicSeer.

Where Can I Get the Demo of PicSeer?

You can download PicSeer from

http://www.yangsky.us/demos/PicSeer/PicSeer.htm

Or from the links in

http://www.yangsky.us/demos/demos.htm

As shown below, a quick link called Cognitive Image Search Engine is available at http://www.yangsky.us/ at the top of the left navigation bar.

How to Know the Price of PicSeer?

PicSeer software family has the following two kinds of products:

- ***End users package***. It is for end users such as a supermarket, an individual collector, or a library, etc. It is licensed to the ender user just like many other software do, namely; a license fee will be charged for each installation.

- ***Developers package***. It is for program developers such as a software company or a equipment manufacture. It provide program modules for the developers to program their own products.

Please send your request of price to sales@yangsky.com

What is the Difference Between the Demo and the Commercial Versions of PicSeer?

The demo version of PicSeer is only to demonstrate the principles and the concept of the cognitive image search technology and since we don't provide customer service to PicSeerDemo, we make it as self-contained as possible. And since the size the entire demo can not be big, we only load around 400,000 search index with the PicSeerDemo installation.

The real PicSeer package is use together with a database server and is much faster and comprehensive than PicSeerDemo. The search index of the PicSeer package is updated continuously along the time as we growing our image search database

rapidly. We expect 1billion index entries will be included for the first BETA release of the PicSeer Package to our licensed customer and based on which we shall provide free search portal to the Internet users..

Where Can I Get the Supports for PicSeer?

See Chapter 5.

Currently PicSeer only supports USB webcams, are you going to support firewire video cameras or TCP/IP cameras?

PicSeer will be developed for both personal and industrial markets. For personal market, PicSeer will mainly support USB webcams. For the industrial markets firewire video cameras and TCP/IP cameras will be supported though currently only USB cameras are supported.

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Support and Ordering Information

This chapter includes the supporting and ordering information for PicSeer.

To order PicSeer or to gain support for PicSeer is simply a few clicks away.

How to Order

Send your check or money order to

Sales Department, Yang's Scientific Research Institute, 1303 East University Blvd. #20882, Arizona 85719-0521, USA.

Please make your check or money order payable to ***Yang's Scientific Research Institute***.

For prices of PicSeer and related products, please send an email to sales@yangsky.com.

Support Information

For ender users, please refer to FQA sections of this User Guide for the most common problems. If you can not find the solution from FQA sections, please send an email to sales@yangsky.com or send a ticket via http://www.yangsky.us/support/.

Demos

The demos of PicSeer can be found at the following link:

http://www.yangsky.us/demos/PicSeer/PicSeer.htm

Or click

http://www.yangsky.us/demos/demos.htm

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