

species-identification-by-uploading-a-photo
Cookbook

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1 Testing

1.1 Getting the repository

It is first required to obtain a copy of the current release. The source code is hosted on Github, and can be retrieved by issuing the following command at the terminal:

```
> git clone
  git@github.com:EncyclopediaOfLife/species-identification-by-uploading-a-photo.git
```

1.2 Building the binaries

To compile the binaries on a linux machine there are a few pre-requisites:

1. You must have the c++ compiler installed, the default is g++ (<http://gcc.gnu.org/>). Compilations using other compilers has not been tested.
2. You must have the OpenCV and GSL libraries installed:
 - <http://opencv.willowgarage.com/wiki/>
 - <http://www.gnu.org/software/gsl/>

Depending on where these have been installed, it may be necessary to alter the Makefile accordingly. Open src/Makefile with a text editor and:

- Point the **INCLUDES** path variable to the corresponding directories where the OpenCV and GSL headers reside (default is /usr/include/opencv and /usr/include/gsl).
- Point the **LIB** path variable to the corresponding directories where the OpenCV and GSL libraries reside (default is /usr/lib).

Close the editor. From a terminal located within the src directory, execute:

```
> ./make all
```

On success, this will place the binaries inside the bin directory. For details on how to invoke each binary through the terminal, see the NOTES section in the corresponding binary source files.

1.3 Setting up the web server

To set up the web front end there are a few pre-requisites:

1. A web server must be running, e.g. Apache (<http://httpd.apache.org/docs/2.0/install.html>)
2. PHP (<http://php.net/downloads.php>) must be available on the web server.
3. The PHP GD library (<http://php.net/manual/en/book.image.php>) must be installed on the web server:

The easiest way to share the web content with the web server is to create a softlink from the local web server root directory to the www directory, this can be done by browsing to the server root, opening a terminal and executing:

```
> ln -s /path/to/species-identification-by-uploading-a-photo/www
species-identification-by-uploading-a-photo
```

The permissions must be altered so the web user (in this case apache) has ownership or access rights of the www/images, www/textures, www/db and www/jobs directories and their contents. Open a terminal and execute from the base of the www directory:

```
> chown -R apache images textures jobs db
```

or

```
> chgrp -R apache images textures jobs db
```

```
> chmod -R 664 apache images textures jobs db
```

2 Use

Browse to localhost in the browser, the following screen should present itself:

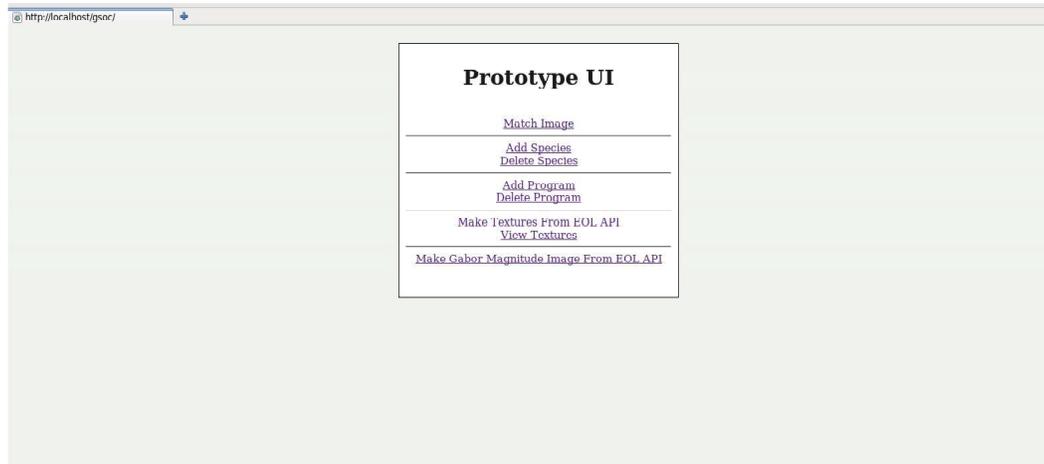


Figure 1: The root screen.

In order to match an image, it is required that you first:

1. **Add a program.** Click on Add Program, type a program name and select a binary (`compare_gabor_mag_image/histogram_backproject`) from the list.
2. **Add a species.** Click on Add Species, type a species name and assign the desired programs and weightings. Weightings are currently arbitrary as the results from executing multiple matching routines do not form an aggregated result dataset.
3. **Add textures.** Click on Make Textures From EOL API, select an EOL page and species from the dropdown and mark a region of interest by dragging a box over the image. Multiple textures for the same image can be added (Crop image and add another patch), a single texture can be submitted for the image (Crop image and continue), or if no textures can be extracted from the image it can be skipped without submitting a texture (Skip image).
4. **Add gabor magnitude images.** Click on Make Gabor Magnitude Image From EOL API. The procedure is the same as for adding textures.

An image can now be matched through the Match Image page, which requires uploading a photo, cropping a significant region from it and clicking the submit (Show me the results!) button.