

OpenCV Tutorial

Part I

Using OpenCV with Microsoft Visual Studio .net 2003

28 November 2005

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OpenCV

What is OpenCV?

(from the documentation)

OpenCV means Intel® Open Source Computer Vision Library. It is a collection of C functions and a few C++ classes that implement some popular Image Processing and Computer Vision algorithms.

The key features

(from the documentation)

Cross-Platform API of C functions
FREE for commercial and non-commercial uses

What this means

You can take advantage of high speed implementations of functions commonly used in Computer Vision/Image Processing.

OpenCV

How to obtain the library

Available on Sourceforge

<http://sourceforge.net/projects/opencvlibrary/>

(Or use your favorite search engine)

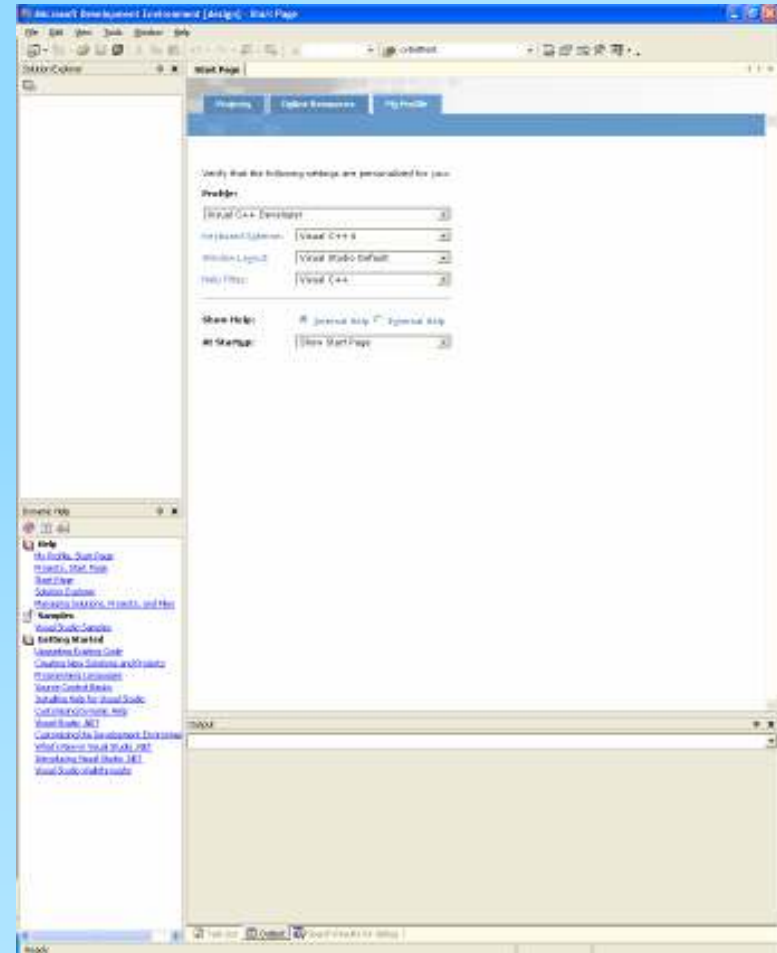
How to install the library

(On Windows)

Download and Install the
Executable

Configuring MSVS .net 2k3

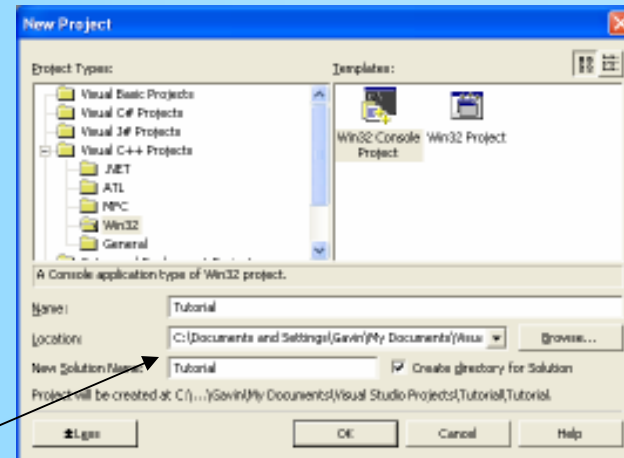
Upon loading Visual Studio it is recommended that you adjust the profile to that of “**Visual C++ Developer.**” This will help keep things straight when I reference keyboard shortcuts later on.



Configuring MSVS .net 2k3

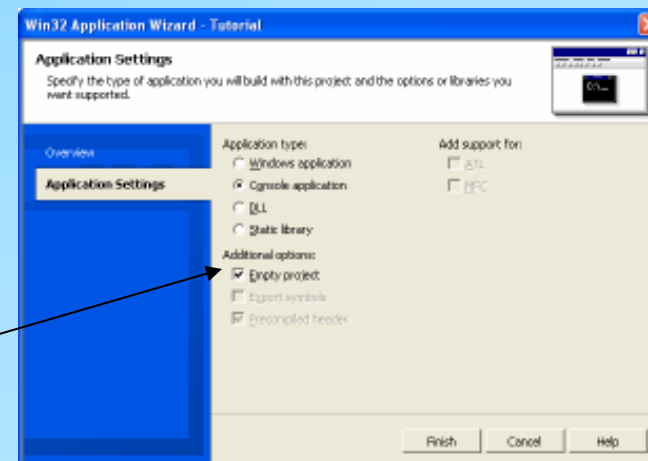
Creating the Project

A project is initially created by selecting:
File -> New -> Project



Create a **“Win32 Console Project”**

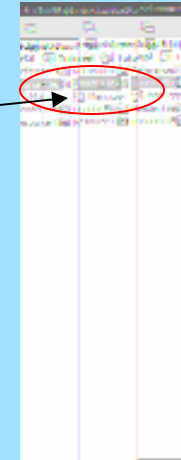
Make it an **“Empty Project”** by selecting the box under **“Application Settings”**



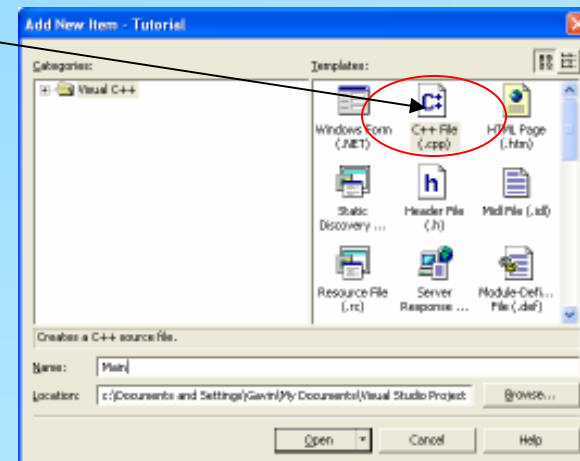
Configuring MSVS .net 2k3

Create the First File

Right Click the **“Source Files”** Folder under the project name (“Tutorial” in this case)
Add -> Add new Item



Select **“C++ file”** and give it a name



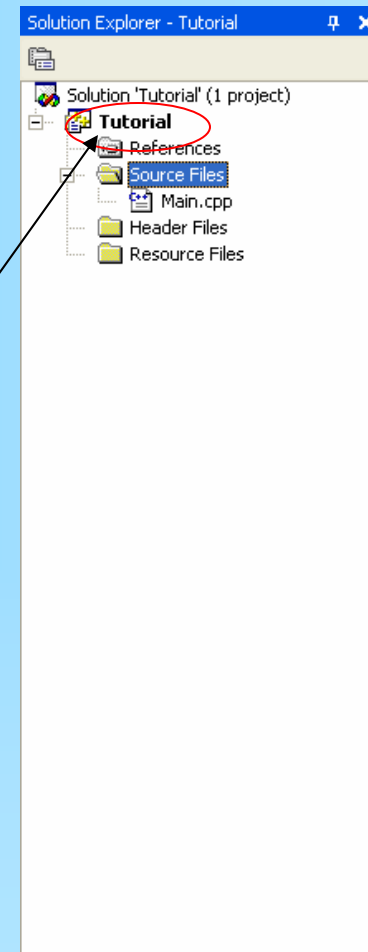
Creating a file makes it possible to set **“Additional Include Directives”** in the C/C++ pane under the project properties.

Configuring MSVS .net 2k3

In order to build projects using OpenCV the required libraries and directives must be included in the project's properties

Open the Properties Pane

Right Click the name of the project and select **"Properties"**
(**"Tutorial"** in this case)



Configuring MSVS .net 2k3

Set Additional Include Directives

Under the C/C++ tab select "General"

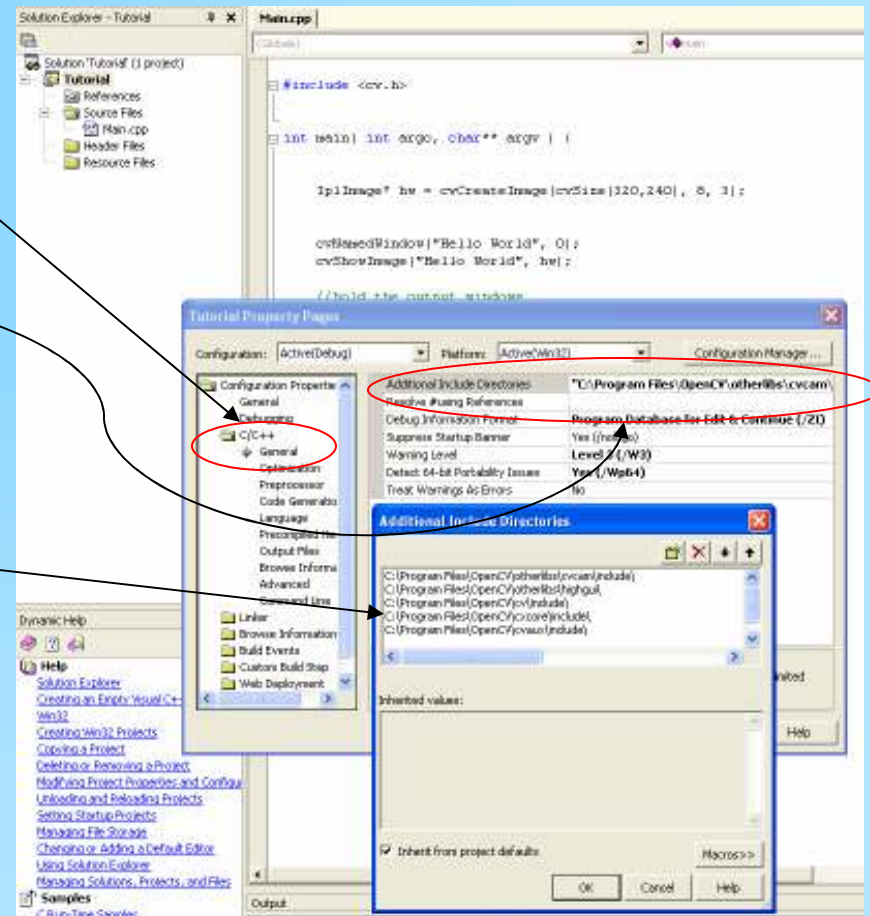
Select the "Additional Include Directives"

Add the full path to each of the folders which contain ".h" files required to use OpenCV

Be sure to include trailing "\"

Utilized Directives

C:\Program Files\OpenCV\cvaux\include\
C:\Program Files\OpenCV\cxcore\include\
C:\Program Files\OpenCV\cv\include\
C:\Program Files\OpenCV\otherlibs\highgui\
C:\Program Files\OpenCV\otherlibs\cvcam\include\



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Set Additional Dependencies

Under the Linker tab select
"Input"

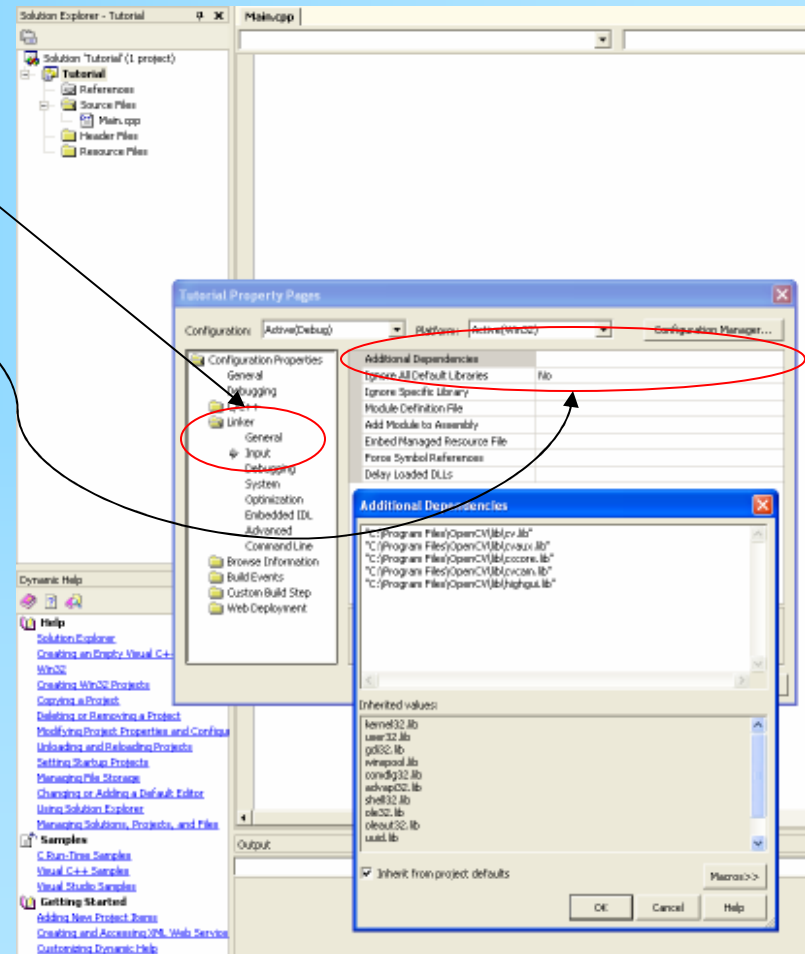
Select the "Additional
Dependencies"

Add the full path to each of the
".lib" files required to use
OpenCV

Be sure to keep the paths in
quotes

Utilized Dependencies

"C:\Program Files\OpenCV\lib\cv.lib"
"C:\Program Files\OpenCV\lib\cvaux.lib"
"C:\Program Files\OpenCV\lib\cxcore.lib"
"C:\Program Files\OpenCV\lib\cvcam.lib"
"C:\Program Files\OpenCV\lib\highgui.lib"



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Testing MSVS .net 2k3

Now that the environment is configured it would be a good idea to test it to make sure that a program will correctly build and run.

Testing the First Program

The enclosed code can be cut and pasted into the file created in the project space to test OpenCV

```
#include <cv.h>
#include <highgui.h>

/*
    This will pop up a small box with "Hello World" as the text.
    @author: Gavin Page, gsp8334@cs.rit.edu
    @date: 28 November 2005
*/
int main( int argc, char** argv ) {
    //declare for the height and width of the image
    int height = 320;
    int width = 240;
    //specify the point to place the text
    CvPoint pt = cvPoint( height/4, width/2 );
    //Create an 8 bit, 3 plane image
    IplImage* hw = cvCreateImage(cvSize(height, width), 8, 3);
    //initialize the font
    CvFont font;
    cvInitFont( &font, CV_FONT_HERSHEY_COMPLEX,
               1.0, 1.0, 0, 1, CV_AA);
    //place the text on the image using the font
    cvPutText(hw, "Hello World", pt, &font, CV_RGB(150, 0, 0) );
    //create the window container
    cvNamedWindow("Hello World", 0);
    //display the image in the container
    cvShowImage("Hello World", hw);
    //hold the output windows
    cvWaitKey(0);
    return 0;
}
```

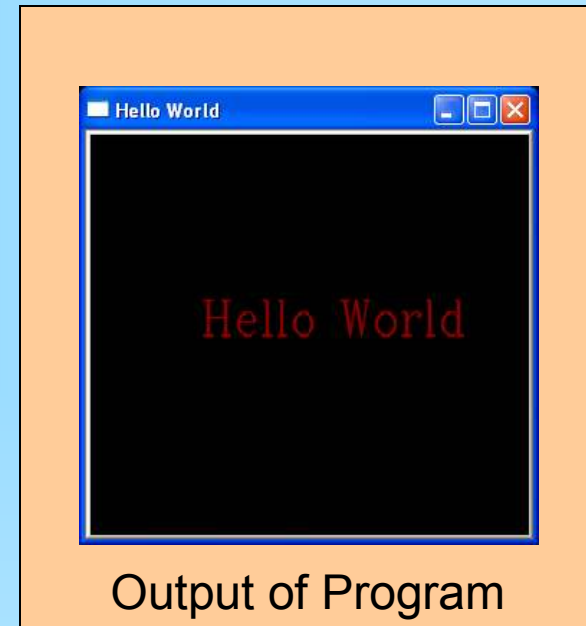
Testing MSVS .net 2k3

Building the Program

The program is built by selecting:
Build -> Build Solution
Or by pressing "**F7**"

Running the Program

The program is run by selecting:
Debug -> {Start|Start without Debugging}
Or by pressing "**F5**" or "**<Ctrl>-F5**"



At this point you should have a working OpenCV project. If the program is not working you should go back and carefully recheck the steps.

From here you can explore the documentation to review the functions available.

There are also a number of tutorials on the web including:
<http://www.site.uottawa.ca/~laganier/tutorial/opencv+directshow/cvision.htm>
<http://www.softintegration.com/products/thirdparty/opencv/demos/>
Or you can just search for them

For code examples there are several example programs included in the OpenCV distribution in OpenCV/samples

You should also join the OpenCV Community located at:
<http://groups.yahoo.com/group/OpenCV/>
As of today there are >15000 members available to answer questions. There is also a searchable message board where you can look up previous queries.

Revision History

Initial Creation: 28 November 2005