**CAP 4453: Robot Vision**

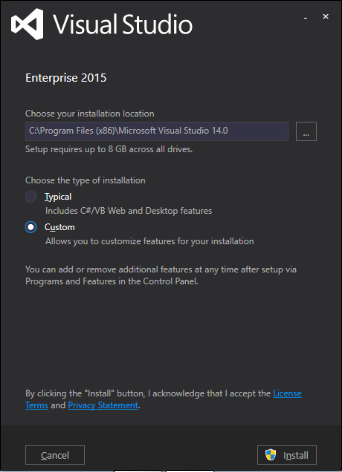
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**AdaBoost Assignment**

Initially, go to https://www.dropbox.com/ and then sign in using the following information: Email: robot.vision.files@gmail.com ,and Password: robotvision

in order to download the AdaBoost Software.

In Visual Studio 2015 or higher, Visual C++ is not installed by default. When installing, be sure to choose Custom installation and then choose the Visual C++.



Or, if Visual Studio is already installed, choose File | New | Project | Visual C++ and you will be prompted to install the necessary components.

1. Create a directory called c:\AdaBoost.

2. The rest of the instructions assume that you are using Microsoft Visual Studio versions 6 and higher.

Create the following two VC++ Win32 Console projects:

c:\AdaBoost\

(the project name is vboost, so the directory of vboost will be generated automatically)

and c:\AdaBoost\

(the project name is vdetect, so the directory of vdetect will be generated automatically).

Both should initially be in default settings.

3. Create the following subdirectories in the vboost folder:-

c:\AdaBoost\vboost\vboost\classifiers,

c:\AdaBoost\vboost\vboost\weights,

and c:\AdaBoost\vboost\vboost\histograms.

4.

Close all projects.

Copy vboost.cpp to the vboost project located in the C:\AdaBoost\vboost\vboost folder (replace the file in that destination).

Copy vdetect.cpp to the vdetect project located in the C:\AdaBoost\vdetect\vdetect folder (replace the file in that destination).

5. Open project, R click on the source files -> Add -> existing item -> browse vdetect.cpp for vdetect project & vboost.cpp for vboost project

6. Make sure that in main menu-> Project -> properties -> configuration properties -> General -> Platform toolset ->

**v100** for VS 2010,

**v110** for VS 2012,

**v120** for VS 2013,

or **v140** for VS 2015

7.

Make sure that new.cls and new.txt do not exist in Adaboost\vboost\vboost

(delete them if necessary)

8.

Copy folders positive and scenery to C:\Adaboost\vboost

Open vboost project.

For Visual Studio 2013 or higher, replace each stricmp with \_stricmp in vboost.cpp.

In addition, add **\_CRT\_SECURE\_NO\_WARNINGS**

Rclick on vboost in Solution Explorer -> Properties -> Configuration Properties -> C/C++ -> Preprocessor -> Preprocessor Definitions -> Edit -> **\_CRT\_SECURE\_NO\_WARNINGS**

Then compile vboost.cpp (Main Menu -> Build -> Build Solution).

Copy vboost.exe to C:\AdaBoost\vboost\vboost.

In command arguments, you have to write:

C:\Adaboost\vboost\vboost> **vboost.exe new.cls 500 500 1 100**

for the program to work (this will read in 500 positive and 500 negative samples).

9. This program has an infinite loop and it is necessary to terminate the prompt window

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10.

Open vdetect project.

For Visual Studio 2013 or higher, replace each stricmp with \_stricmp in vdetect.cpp.

In addition, add **\_CRT\_SECURE\_NO\_WARNINGS**

Rclick on vdetect in Solution Explorer -> Properties -> Configuration Properties -> C/C++ -> Preprocessor -> Preprocessor Definitions -> Edit -> **\_CRT\_SECURE\_NO\_WARNINGS**

Then compile vdetect.cpp (Main Menu -> Build -> Build Solution).

Copy new.cls from the vboost folder to c:\AdaBoost\vdetect\Debug

11. [optional] Download group photographs in PGM format to the c:\AdaBoost\vdetect\debug folder

12. Run detector program on each of PGM files in Command Prompt:

vdetect.exe -i new.cls <photo name.pgm>

For example:

C:\Adaboost\vdetect\Debug> **vdetect.exe -i new.cls Germany.pgm**

The following output will be produced:

a) scale.pgm

a scaled version of your image.

b) detected.pgm

a file showing detection results.

(This program has an infinite loop and it is necessary to terminate the prompt window)

13. The following parameters affect performance of your detection:

a) vdetect.cpp line 894,

classifier.thresh = 0.62

try to experiment with threshold values from 0.4 to 0.8 and observe results.

b) vdetect.cpp line 416, double scale = 1.1;

try to experiment with scale values from 0.8 to 1.4 and observe results.

14. [Optional] Run the whole experiment doing training using 2000 positive images and 2000 negative images.

15. If you don’t have the Visual Studio installed on your machine, here is what you can do about this:

a) Go to the web address below:

https://e5.onthehub.com/WebStore/Security/SignIn.aspx?rurl=%2fWebStore%2fWelcome.aspx%3fws%3d48858cba-c19b-e011-969d-0030487d8897&ws=48858cba-c19b-e011-969d-0030487d8897&vsro=8

Then create an account with your Knights Email.

It takes up to 2 weeks for them to confirm your student status. After they confirmed it, they will send an email to complete your registration.

Whenever your registration is completed, you have access to many useful software like Visual Studio which is free for students.

b) Express edition is also free:

i- https://www.visualstudio.com/downloads/

(click on view all downloads | Visual Studio 2015 | Express 2015 for Desktop )

ii- https://www.visualstudio.com/vs/visual-studio-express/

**Best Regards.**

**Eng. Samer Iskander**