Installing OpenCV for Webots (Windows Only)

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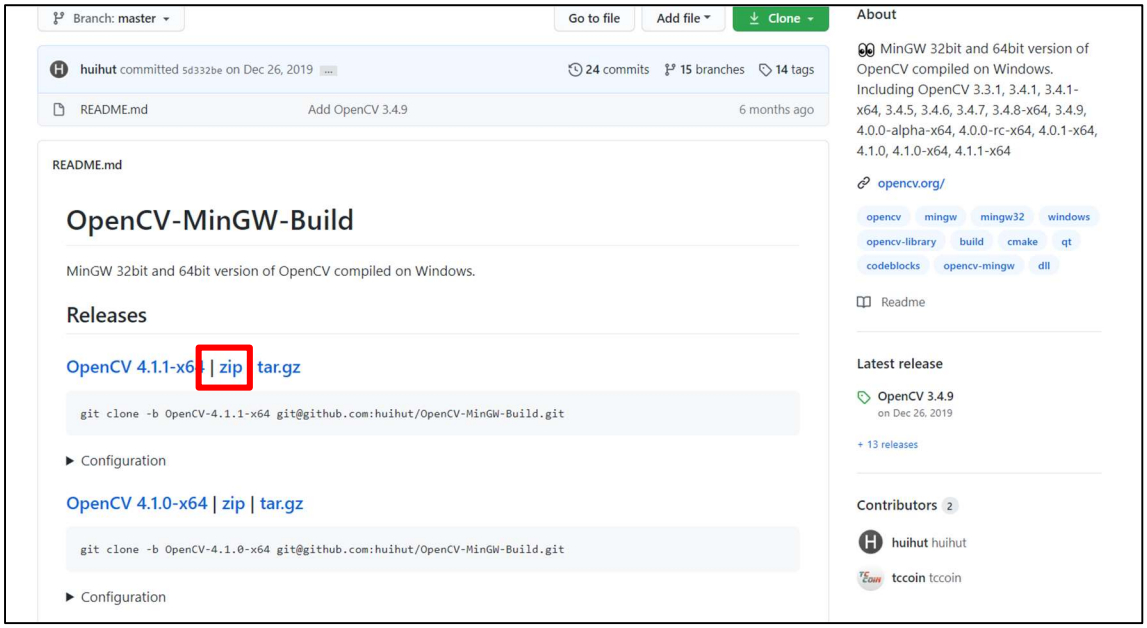
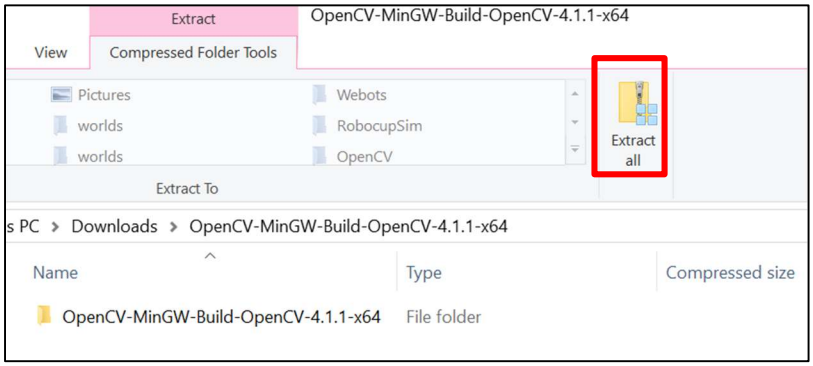
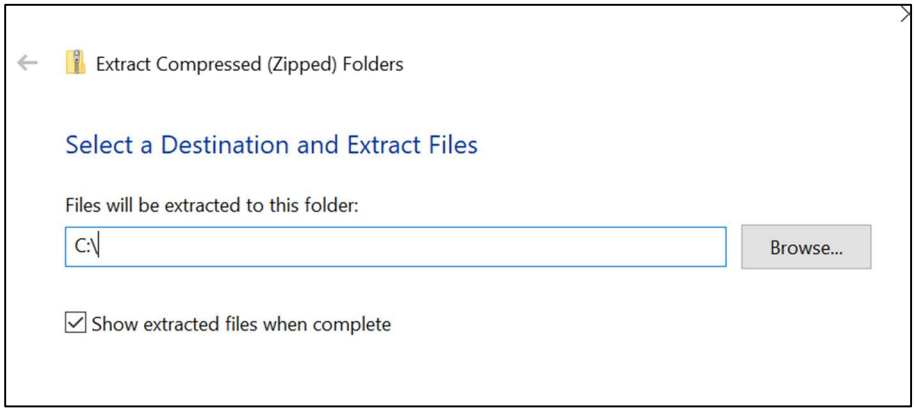
1. Go to https://github.com/huihut/OpenCV-MinGW-Build and download the zip for OpenCV 4.1.1 (or whatever version you want to use)

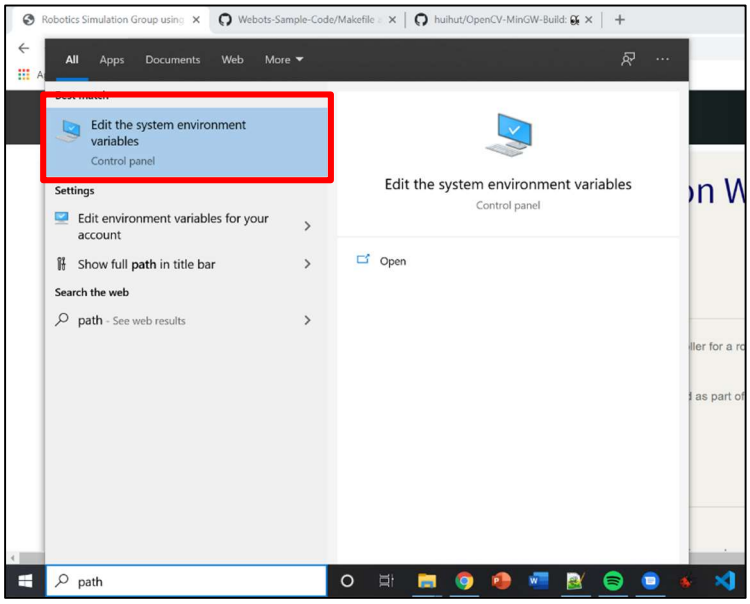


2. Open the zip and extract the contents into your C:\ drive

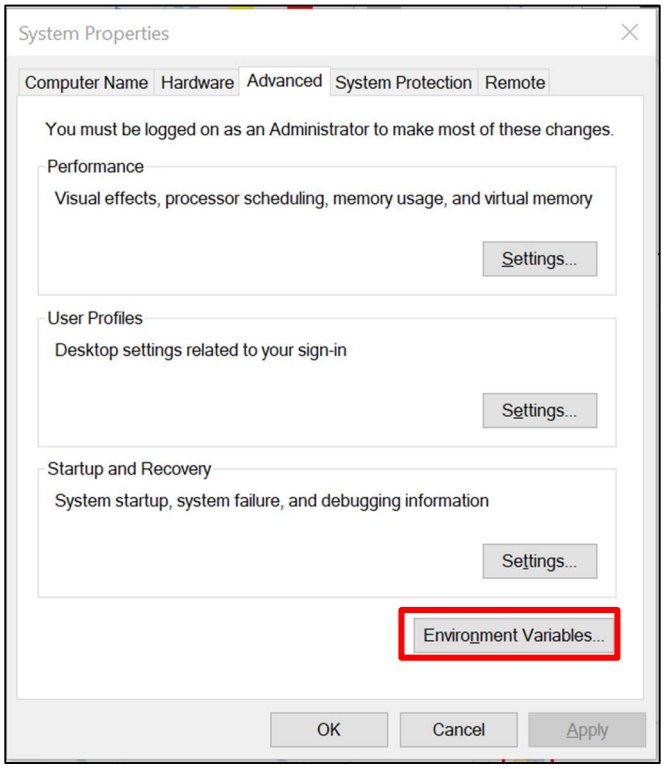




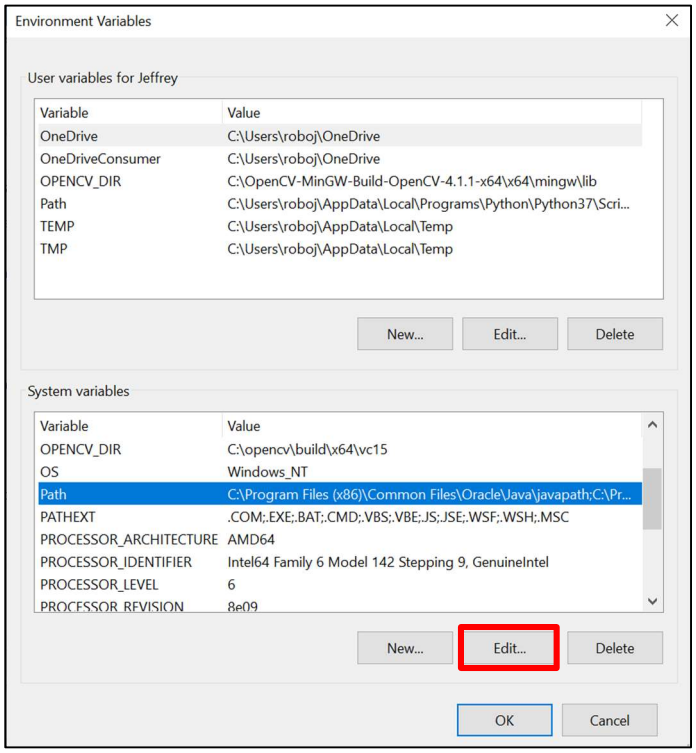
3. Separately, search “path” into the Windows search bar and hit enter (should bring up Edit the system environment variables)



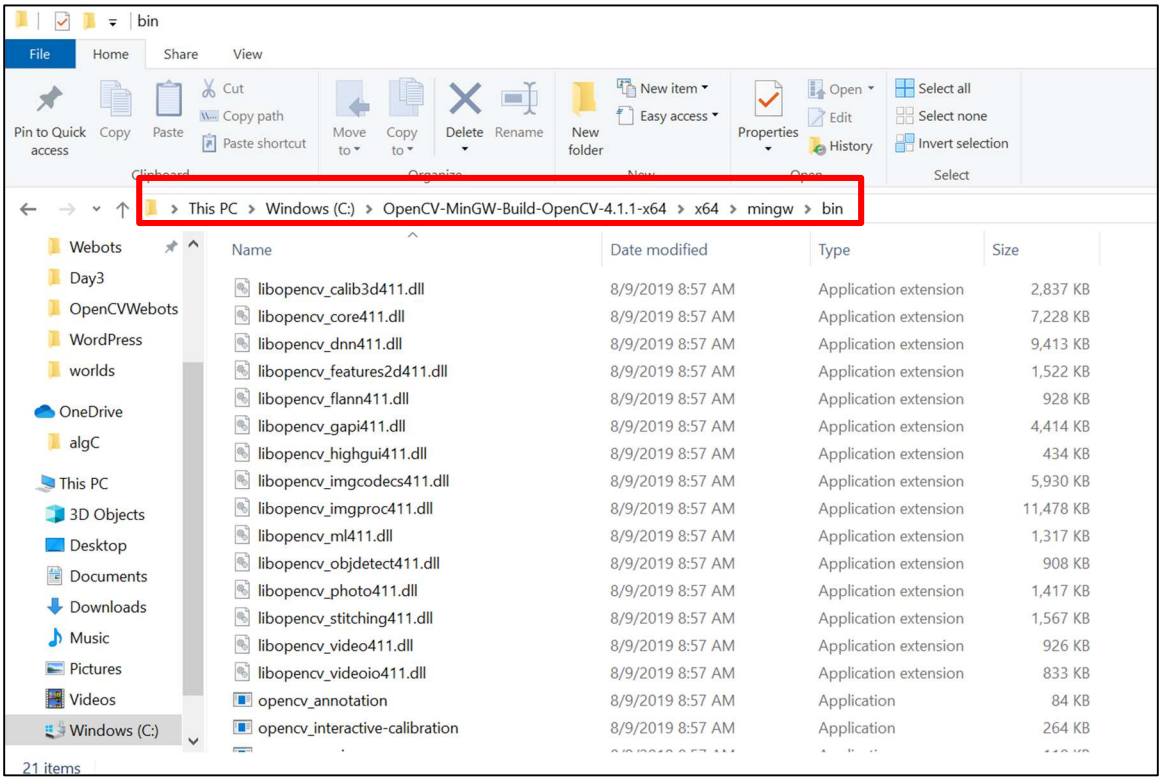
4. Click on Environment Variables and an “Environment Variables” window should appear



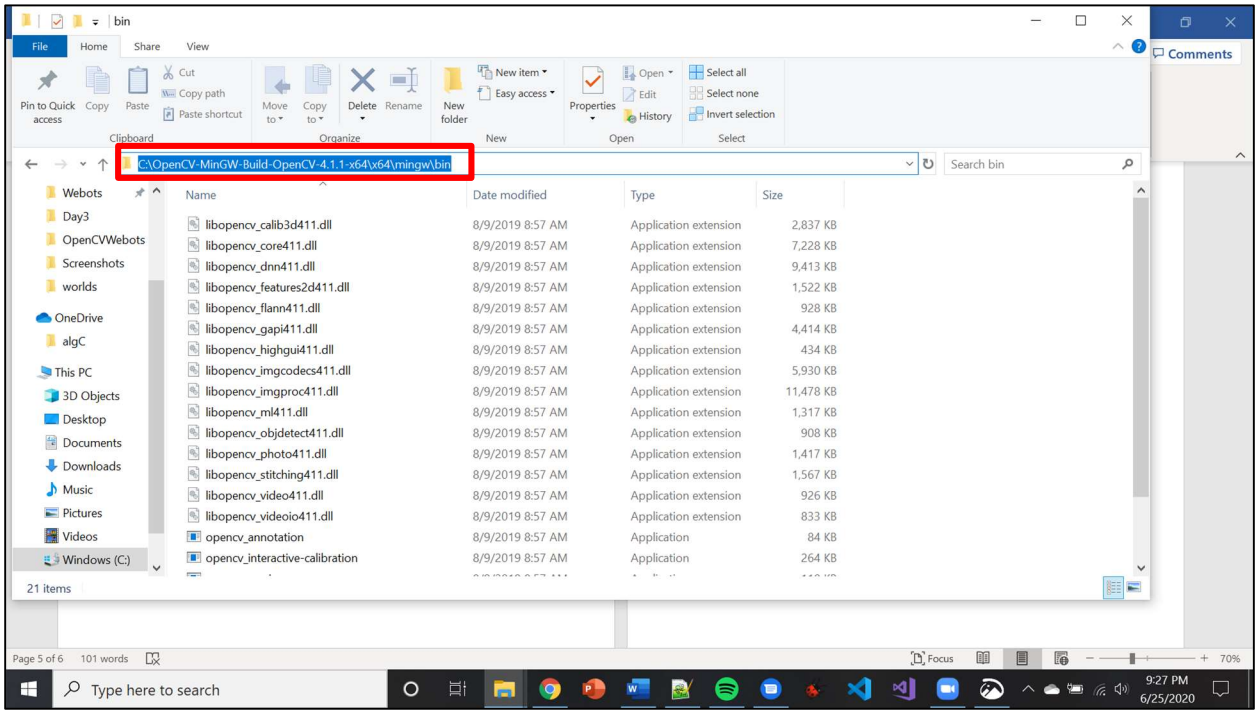
5. Click on Path and press Edit, and a “Edit environment variable” window should appear



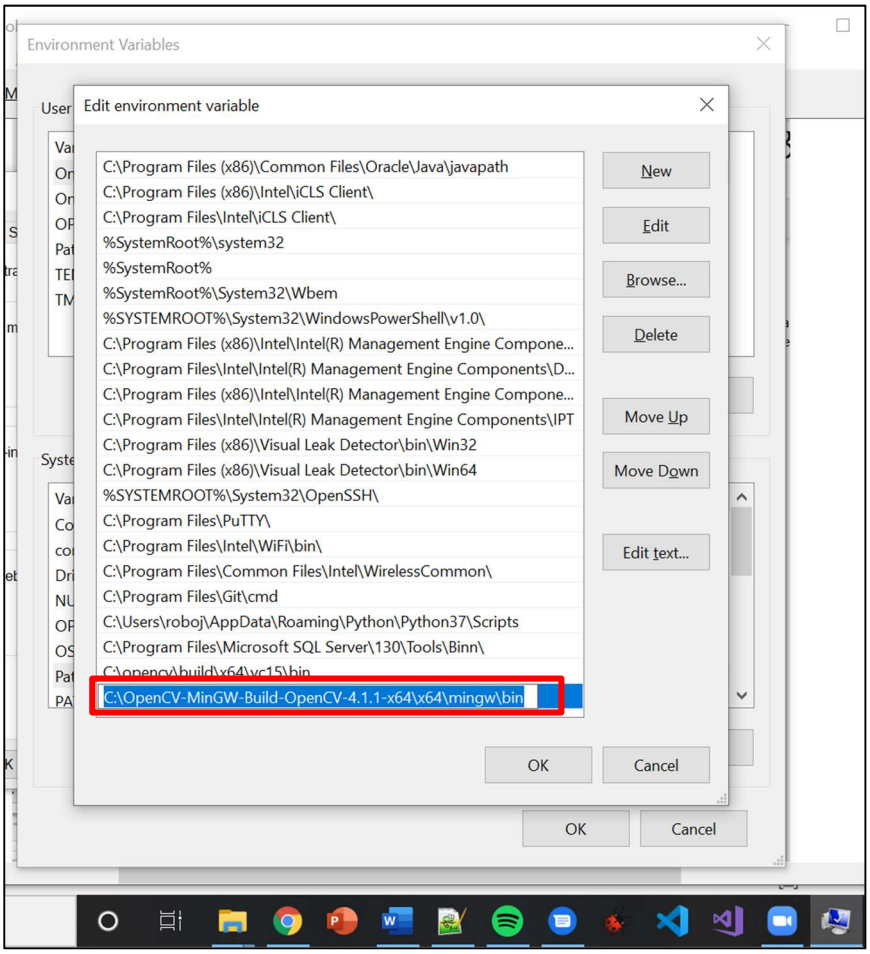
6. Switch back to your C:\ drive and navigate the following path



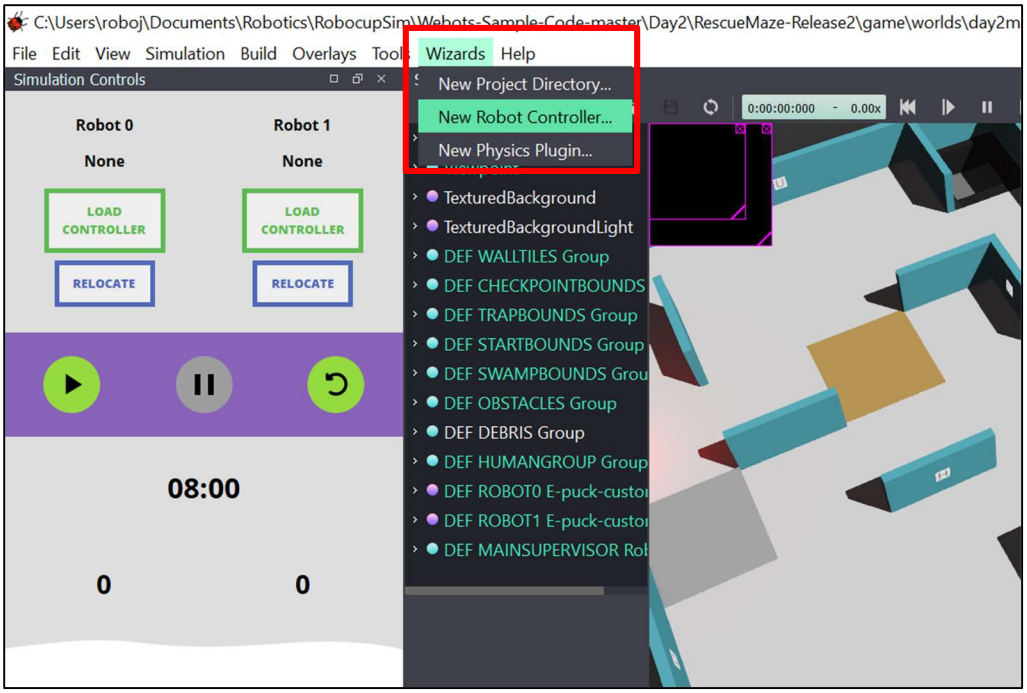
7. Copy the path by clicking directly to the right of “bin” and pressing ctrl c - the path should be “C:\OpenCV-MinGW-Build-OpenCV-4.1.1-x64\x64\mingw\bin” if you followed the steps exactly



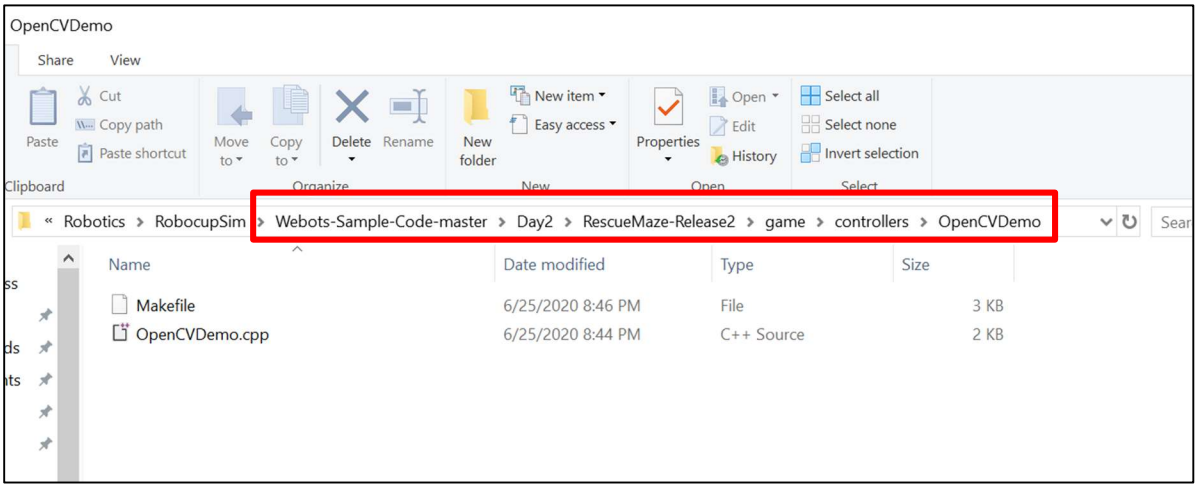
8. Switch back to the “Edit environment variable” window from before, press new, paste in the folder path you copied from before



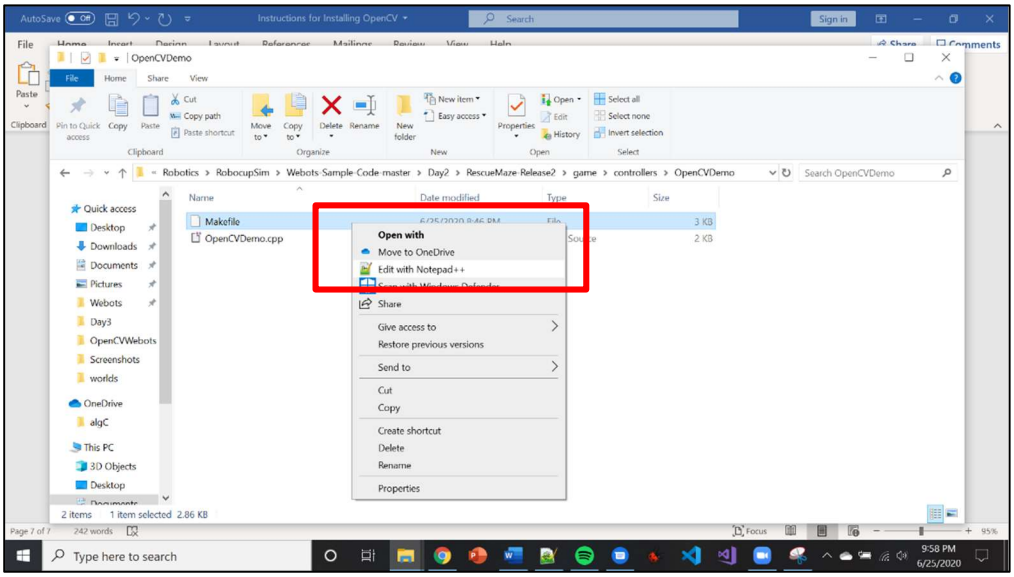
9. You can now press “OK” on all windows until all of them disappear. You have now successfully downloaded the pre-built OpenCV library for Windows and added it to a list of paths that search for libraries. Now, we have to create a Webots robot controller that can find its way to the OpenCV folder. Create a new robot controller like normal by going to Wizards -> New Robot Controller, and following the steps.



10. Separately, navigate to the folder that your world is stored in, go up one level, go into the folder named “controllers,” and enter the folder that has the same name as your robot controller.



11. Edit the Makefile with a text editor of your choosing – I am using Notepad++



12. Go to our GitHub page -> Day3 and open Makefile (or use this link: https://github.com/victorhu3/Webots-Sample-Code/blob/master/Day3/Makefile). Then, copy lines 50 and 51.

```
33  ###
34  ### Here is a description of the variables you may set in your local Makefile:
35  ###
36  ### ---- C Sources ----
37  ### if your program uses several C source files:
38  ### C_SOURCES = my_plugin.c my_clever_algo.c my_graphics.c
39  ###
40  ### ---- C++ Sources ----
41  ### if your program uses several C++ source files:
42  ### CXX_SOURCES = my_plugin.cc my_clever_algo.cpp my_graphics.c++
43  ###
44  ### ---- Compilation options ----
45  ### if special compilation flags are necessary:
46  ### CFLAGS = -Wno-unused-result
47  ###
48  ### ---- Linked libraries ----
49  ### if your program needs additional libraries:
50  INCLUDE = -I"C:\OpenCV-MinGW-Build-OpenCV-4.1.1-x64\include"
51  LIBRARIES = -L"C:\OpenCV-MinGW-Build-OpenCV-4.1.1-x64\x64\mingw\lib" -llibopencv_core411 -llibopencv_imgproc411 -llibopencv_highgui411 -llibopencv_imgcodecs411
52  ###
53  ### ---- Linking options ----
54  ### if special linking flags are needed:
```

13. Go back to the Makefile that you opened with your chosen text editor and replace that Makefile's lines 50 and 51 with the two lines that you just copied.

```
36 ### ---- C Sources ----
37 ### if your program uses several C source files:
38 ### C_SOURCES = my_plugin.c my_clever_algo.c my_graphics.c
39 ###
40 ### ---- C++ Sources ----
41 ### if your program uses several C++ source files:
42 ### CXX_SOURCES = my_plugin.cc my_clever_algo.cpp my_graphics.c++
43 ###
44 ### ---- Compilation options ----
45 ### if special compilation flags are necessary:
46 ### CFLAGS = -Wno-unused-result
47 ###
48 ### ---- Linked libraries ----
49 ### if your program needs additional libraries:
50 INCLUDE = -I"C:\OpenCV-MinGW-Build-OpenCV-4.1.1-x64\include"
51 LIBRARIES = -L"C:\OpenCV-MinGW-Build-OpenCV-4.1.1-x64\x64\mingw\lib" -llibopencv_core411 -llibopencv_imgproc411 -llibopencv_highgui411 -llibopencv_imgcc
52 ### ---- Linking options ----
53 ### if special linking flags are needed:
54 ### LFLAGS = -s
55 ###
56 ### ---- Webots included libraries ----
57 ### if you want to use the Webots C API in your C++ controller program:
58 ### USE_C_API = true
```

14. Save the Makefile, and now you are free to use the OpenCV library in the robot controller that you just created!