

No supported compilers were found when running PRoNTo for the first time in MATLAB R2016a or later on versions

Users using MATLAB R2016a, R2017a and later on versions may find errors related to compilers when first starting PRoNTo in MATLAB. One example on Mac is shown as follows:



```
PRoNTo v3.0 - http://www.mlnl.cs.ucl.ac.uk/pronto

SVM path: OK
GP path: OK
Error: /Code/PRoNTo_dev-MEEG/machines/liblinear-2.20/matlab/make.m failed (line 13)
No supported compiler or SDK was found. For options, visit http://www.mathworks.com/support/compilers/R2017a/.
=> Please check README for detailed instructions.
Item 'Tissue probability map', field 'val': Number of matching files (0) less than required (1).
Item 'Tissue probability map', field 'val': Number of matching files (0) less than required (1).
Item 'Tissue probability map', field 'val': Number of matching files (0) less than required (1).
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Item 'Tissue probability map', field 'val': Number of matching files (0) less than required (1).
Item 'Tissue probability map', field 'val': Number of matching files (0) less than required (1).
PRoNTo present working directory:
/Code/PRoNTo_dev-MEEG
```

Figure 1. Example of the error information output by MATLAB when the proper compilers are not installed.

Windows users may find similar error information. Some third party libraries used in PRoNTo, such as Liblinear and Libsvm require specific compilers. However, MathWorks provides different supported compilers for different versions of MATLAB. This means that users may have to install specific compilers supported by or compatible with your MATLAB versions. Below we will illustrate how to find out, download and install the right compilers for Windows, Mac and Linux users.

Windows

For different MATLAB versions, there are lists of supported compilers provided by MathWorks. If the user gets the above error information when trying to launch PRoNTo, there will be a link guiding you to the right website with the right compiler information, such as the URL shown in Figure 1. Alternatively, users can visit the following link:

https://uk.mathworks.com/support/sysreq/previous_releases.html

Users can find which compiler needed to be installed in the 'Supported Compilers' column (Figure 2).

Previous Releases: System Requirements and Supported Compilers

Release	Windows	Linux	Mac	Solaris/UNIX	Supported Compilers	Platform Availability
R2018b (MATLAB 9.5)	Details	Details	Details	N/A	Details	Details
R2018a (MATLAB 9.4)	Details	Details	Details	N/A	Details	Details
R2017b (MATLAB 9.3)	Details	Details	Details	N/A	Details	Details
R2017a (MATLAB 9.2)	Details	Details	Details	N/A	Details	Details
R2016b (MATLAB 9.1)	Details	Details	Details	N/A	Details	Details
R2016a (MATLAB 9.0)	Details	Details	Details	N/A	Details	Details

Figure 2. System requirements and supported compilers for different MATLAB versions.

After clicking 'Details', a document is opened where the user can find the right compilers for different OS systems. If we take MATLAB R2016b as an example (Figure 3), it can be seen that there are different supported compilers, such as MinGW. MinGW is a preferred compiler by MATLAB, hence we will use it as the example in the following descriptions.

Supported and Compatible Compilers – Release 2016b

A number of MathWorks products or product features require that you have a third-party compiler installed on your system. The tables below outline the compilers that are supported by various MathWorks products. These compilers are provided by a number of vendors and are available under a variety of commercial, academic, or open source terms; visit the providers' websites for further information.

Please see [Polyspace documentation](#) for the list of compilers that Polyspace supports in the current release.

View System Requirements for [previous releases](#).

Windows (64-bit)

Note:

- MinGW 4.9.2 will be replaced by a newer version in a future release
- Microsoft Visual C++ 2010 Professional SP1 is not supported as of R2016b
- Microsoft Visual C++ 2012 Professional will not be supported in a future release
- Microsoft .NET Framework SDK 2.0, 3.0, 3.5 will not be supported in a future release
- Support for Microsoft .NET Framework SDK 4.6 was added in R2016b
- Java Development Kit 1.7 will be replaced by a newer version in a future release
- Microsoft Windows SDK 7.1 support will be dropped in a future release

Figure 3. List of supported compilers on Windows for release 2016b.

The next step is to download and install MinGW. Users can use 'Add-Ons' in Home menu of MATLAB main window. Click it, then type MinGW in the search box of Add-On Explorer. Then click install and follow the procedures.

If the user cannot download it from the 'Add-Ons', it is possible that your anti-virus or firewalls are blocking the connection. Try to deactivate them and download again.

If this is still not working, you can try to download MinGW manually. Below are instructions provided by MathWorks support:

- 1) Delete the MinGW installation files from:
C:\Users\\MATLAB\Downloads\SupportPackages\R2016b\downloads\R2016b
If you do not find the MinGW files, please continue from step 2.
- 2) Download the installation files from the following webpage:
<https://sourceforge.net/projects/tdm-gcc/files/TDM-GCC%20Installer/Previous/1.1309.0/>
You will need the file tdm64-gcc-4.9.2.exe for 64-bit.
- 3) Start the installation. Deactivate the option 'Check for updates' on the welcome screen.
Choose a path without spaces, e.g.: C:\TDM-GCC-64
- 4) After the installation create the environment variable:
MW_MINGW64_LOC=C:\TDM-GCC-64
For further details on how to do so, please refer to the following link:
<https://uk.mathworks.com/matlabcentral/answers/313298-i-already-have-mingw-on-my-computer-how-do-i-configure-it-to-work-with-matlab>
- 5) Restart MATLAB and type below command in MATLAB command prompt:
>> mex -setup

This should now recognize MinGW.

After MinGW is properly installed, type

```
>> make
```

PRoNTto then should work. If the users do not want to use MinGW, they must go to the corresponding download websites and follow the instructions provided there for the other compilers.

Mac

Similar to Windows users, Mac users must first find out which compiler they need to install. You can find this out either in the error given by MATLAB or searching the website using the URL mentioned before as shown in Figure 2. Here, we consider MATLAB R2017a running on Mac as an example.

By clicking the link in Figure 1, the user can see which compilers MathWorks supports for R2017a on Mac, as shown in Figure 4. Users will find that the document says 'Xcode 10.x is supported as of R2018b', but not for R2017b. In the documentation for R2017b (which users can find by using the URL pointing to Figure 2), it can be found that Xcode7.x, 8.x and 9.x are supported for this version. However, Xcode 10.x is the one that can be more easily found on App Store. We hence downloaded Xcode 10.x and it worked fine. Therefore the following descriptions are based on this one.

Windows	Mac	Linux
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Note:

- Xcode 10.x is supported as of R2018b.

macOS

On macOS, no C compiler is supplied with MATLAB. If you use products that require one, Apple's development environment for macOS (Xcode) is available in the Mac App Store.

MATLAB Product Family

Compiler	MATLAB	MATLAB Compiler SDK		MATLAB Coder	SimBiology	Fixed-Point Designer	Audio System Toolbox
	<i>For MEX-file compilation, Load library, and external usage of MATLAB Engine and MAT-file APIs</i>	C/C++	Java	<i>For all features</i>	<i>For accelerated computation</i>	<i>For accelerated computation</i>	<i>For validating and generating audio plugins</i>
Xcode 10.x Available at no charge	✓	✓		✓	✓	✓	✓
Xcode 9.x Available at no charge	✓	✓		✓	✓	✓	✓
Xcode 8.x Available at no charge	✓	✓		✓ ¹	✓	✓	✓
Intel Parallel Studio XE 2018 for Fortran	✓						

Figure 4. Information on supported compilers for MATLAB R2017a on Mac.

Download Xcode 10.x in your App store.

Open MATLAB 2017a, type:

```
>> mex -setup
```

You might find the following information displayed:

```
>> mex -setup
MEX configured to use 'Xcode with Clang' for C language compilation.
Warning: The MATLAB C and Fortran API has changed to support MATLAB
variables with more than 2^32-1 elements. You will be required
to update your code to utilize the new API.
You can find more information about this at:
http://www.mathworks.com/help/matlab/matlab\_external/upgrading-mex-files-to-use-64-bit-api.html.

To choose a different language, select one from the following:
mex -setup C++
mex -setup FORTRAN
>> make
Building with 'Xcode with Clang'.
/Users/rickadams/Desktop/Pronto_compiler/PROnto_MEEG/PROnto_dev/machines/libsvm-3.20/matlab/libsvmread.c:202:5: warning: comparison of array 'filename' equal to a null point
    if(filename == NULL)
       ~~~~~^~~~~
1 warning generated.

MEX completed successfully.
Building with 'Xcode with Clang'.
MEX completed successfully.
Building with 'Xcode Clang++'.
clang: warning: treating 'c' input as 'c++' when in C++ mode, this behavior is deprecated [-Wdeprecated]
clang: warning: treating 'c' input as 'c++' when in C++ mode, this behavior is deprecated [-Wdeprecated]

MEX completed successfully.
Building with 'Xcode Clang++'.
clang: warning: treating 'c' input as 'c++' when in C++ mode, this behavior is deprecated [-Wdeprecated]
/Users/rickadams/Desktop/Pronto_compiler/PROnto_MEEG/PROnto_dev/machines/libsvm-3.20/matlab/svmpredict.c:17:36: warning: control reaches end of non-void function [-Wreturn-t
int print_null(const char *s,...) {}
      ^
1 warning generated.

clang: warning: treating 'c' input as 'c++' when in C++ mode, this behavior is deprecated [-Wdeprecated]

MEX completed successfully.
>> |
```

Figure 5. A warning information given by MATLAB R2017a on Mac after XCode 10.x installed.

There are C and C++ sources in the third party libraries, so specifying the right C++ compiler manually may be required. Type:

```
>> make
```

If this does not work, the user must close MATLAB and restart it again. Type 'mex -setup', then click:

`mex -setup C++`

Then type:

`>> make`

The third-party libraries in PRoNTto that require compilers should work now.

Linux

We have tested PRoNTto in MATLAB R2017a and R2018a on Centos and no errors related to compiler issues were found. GCC is the compiler included in many Linux distributions, hence MATLAB supports it. However, if users see a warning after starting PRoNTto as shown below:

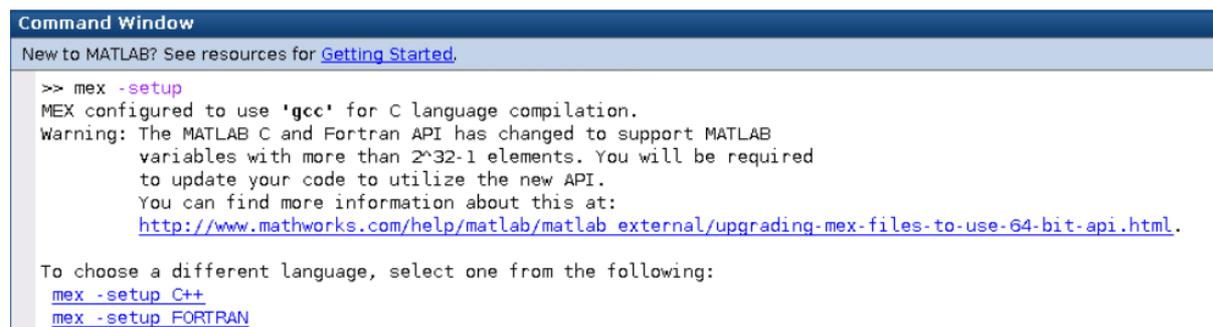
```
Building with 'gcc'.
MEX completed successfully.
Building with 'g++'.
cc1plus: warning: command line option '-std=c99' is valid for C/ObjC but not for C++ [enabled by default]
cc1plus: warning: command line option '-std=c99' is valid for C/ObjC but not for C++ [enabled by default]
cc1plus: warning: command line option '-std=c99' is valid for C/ObjC but not for C++ [enabled by default]
cc1plus: warning: command line option '-std=c99' is valid for C/ObjC but not for C++ [enabled by default]
cc1plus: warning: command line option '-std=c99' is valid for C/ObjC but not for C++ [enabled by default]
```

Figure 6. A warning given by MATLAB R2017a on Linux after starting PRoNTto for the first time.

Users can type:

`>> mex -setup`

The following message will be listed:



```
Command Window
New to MATLAB? See resources for Getting Started.

>> mex -setup
MEX configured to use 'gcc' for C language compilation.
Warning: The MATLAB C and Fortran API has changed to support MATLAB
variables with more than 2^32-1 elements. You will be required
to update your code to utilize the new API.
You can find more information about this at:
http://www.mathworks.com/help/matlab/matlab\_external/upgrading-mex-files-to-use-64-bit-api.html.

To choose a different language, select one from the following:
mex -setup C++
mex -setup FORTRAN
```

Figure 7. The message shown after typing 'mex -setup' in MATLAB prompt.

Click:

`mex -setup C++`

Type:

`>> make`

The third-party libraries in PRoNTto that require compilers should work now.

