6.3.1 安装 Windows SDK 7.1

为了将 m 文件编译生成动态链接库文件，MATLAB 需要安装编译器，例如，Windows SDK 7.1，这里以 Win10 64-bit 为例，说明 Windows SDK 7.1 和.NET4 的安装过程。

MATLAB Product Family – Release 2016a									
	MATLAB	MATLAB Compiler	MATLAB Compiler SDK				MATLAB Coder	SimBiology	Fixed Point Designer
Compiler	For MEX-file compilation, **loadlibrary**, and external usage of MATLAB Engine and MAT-file APIs	Excel add-in for desktop	C/C++ & COM	.NET	Java	Excel add-in for MPS	For all features	For accelerated computation	For accelerated computation
MinGW 4.9.2 C/C++ (Distributor: TDM-GCC) Available at no charge	✔						✔ 6	✔	✔
Microsoft Visual C++ 2015 Professional	✔	✔	✔	✔ 4			✔	✔	✔
Microsoft Visual C++ 2013 Professional	✔	✔	✔	✔ 4			✔	✔	✔
Microsoft Visual C++ 2012 Professional	✔	✔	✔	✔ 4			✔	✔	✔
Microsoft Visual C++ 2010 Professional SP1	✔	✔	✔	✔ 4			✔	✔	✔
Microsoft Windows SDK 7.1 Available at no charge; requires .NET Framework 4.0	✔	✔	✔				✔ 6	✔	✔

https://ww2.mathworks.cn/support/requirements/previous-releases.html

（1）卸载 Microsoft Visual Studio C++ 2010，下面 4 个组件需要卸载：

Visual c++ 2010 x86 redistributable，

Visual c++ 2010 x64 redistributable（64 位 windows），

Microsoft Visual C++　Compilers 2010 X86 和 X64 版本，

（2）修改 Windows SDK 7.1 安装包内的配置文件，安装 Windows SDK 7.1 需要安装.NET FrameWork 4.0，Win10 下安装提示已经安装更高版本的.NET FrameWork，可通过修改 Windows SDK 7.1 安装包内的配置文件，令 Windows SDK 7.1 安装支持.NET FrameWork 4.0 以上版本，完成安装，打开 Windows SDK 7.1 安装包（需解压）内的 Setup 文件夹。

用记事本打开 Setup 文件夹下的 SDKSetup.exe.config 文件，

使用 Setup 文件夹下 SDKSetup.exe 安装，安装完成。

（3）安装 Microsoft Windows SDK 7.1 时出现的错误

错误一：

A problem occurred while installing selected Windows SDK components.

Installation of the "Microsoft Windows SDK for Windows 7 Compilers for x86"

product has reported the following error：安装时发生严重错误

Please attempt to resolve the problem and then start Windows SDK setup again. If you

continue to have problems with this issue, please visit the SDK team support page at

http://go.microsoft.com/fwlink/?LinkId=130245.

Click the View Log button to review the installation log.

To exit, click Finish.

解决办法:

安装 SDK ver7.1 时不要勾选 Visual C++ compiler，装完后安装 KB2519277

错误二:

A problem occurred while installing selected Windows SDK components.

Installation of the "Microsoft Windows SDK for Windows 7" product has reported the

following error: Please refer to Samples\Setup\HTML\ConfigDetails.htm document for

further information.

Please attempt to resolve the problem and then start Windows SDK setup again. If you

continue to have problems with this issue, please visit the SDK team support page at

http://go.microsoft.com/fwlink/?LinkId=130245.

Click the View Log button to review the installation log.

To exit, click Finish.

解决办法:

卸载 Visual C++ 2010 Redistributable

（4）验证 Windows SDK 7.1

```
>> mex -setup
MEX 配置为使用 'Microsoft Windows SDK 7.1 (C)' 以进行 C 语言编译。
警告: MATLAB C 和 Fortran API 已更改, 现可支持
    包含 2^32-1 个以上元素的 MATLAB 变量。不久以后,
    您需要更新代码以利用
    新的 API。您可以在以下网址找到相关详细信息:
    http://www.mathworks.com/help/matlab/matlab_external/upgrading-mex-files-to-use-64-bit-api.html。

要选择不同的 C 编译器, 请从以下选项中选择一种命令:
MinGW64 Compiler (C)  mex -setup:'C:\Program Files\MATLAB\R2016a\bin\win64\mexopts\mingw64.xml' C
Microsoft Windows SDK 7.1 (C)  mex -setup:C:\Users\OTA\AppData\Roaming\MathWorks\MATLAB\R2016a\mex_C_win64.xml C

要选择不同的语言, 请从以下选项中选择一种命令:
 mex -setup C++
 mex -setup FORTRAN
>>
```

在 Matlab 中按简单的 M 文件语法规则设计出来完成特定计算的算法。然后用 Matlab 编译器调用 mex 命令创建 C 共享库函数(DLL)或 C++静态函数库，最后将它们整合到 C/C++应用程序中，编译完这些 C/C++应用程序，就可以用这些算法来实现特定的计算功能，这过程中隐藏了算法和加快了代码的执行效率。

```
function theimage=gasket(numpoits)
theimage=zeros(1000);
corners=[866 1;1 500;866 1000];
startpoit=[866 1];
therand=ceil(rand(numpoits,1)*3);
for ii=1:numpoits
    startpoit=floor((corners(therand(ii),:)+startpoit)/2);
    theimage(startpoit(1),startpoit(2))=1;
end
imagesc(theimage)
colormap([1 1 1;0 0 0]);
axis equal tight
```

现在直接调用

```
>> tic ,gasket(5000000);toc
时间已过 1.969898 秒。
```

接着把它编译成 mex 文件在调用试试，

```
>> mcc -m tic gasket;tic ,gasket(5000000);toc
时间已过 0.901737 秒。
```