# Fold slice error collection

This is a collection of all the errors we have encountered when running ptychography using fold slice, both mixed state and multislice ptychography, on the cluster and local computer.

**Missing necessary toolboxes**

Error message:

1. Line 239 of fold\_slice/ptycho/+core/+analysis/plot\_objects.m, waiting for keyboard input.

Cause: missing Risk Management Toolbox and Statistics and Machine Learning Toolbox. Installing Risk Management Toolbox automatically install Statistics and Machine Learning toolbox.

1. Line 97 of fold\_slice/ptycho/+engines/+GPU/+GPU\_wrapper/initialize.m: Unrecognized function or variable 'gpuDeviceCount'.

Cause: missing Parallel Computing toolbox.

Explanation: These errors only happen on local computers, the Matlab installed on the cluster has all the toolboxes installed. There is a series of error that could happen when Matlab does not have required toolboxes, necessary toolboxes include:

Image Processing Toolbox

Risk Management Toolbox

Statistics and Machine Learning Toolbox

Parallel Computing Toolbox

Solution: Go to Matlab Home > Add-ons > Get Add-Ons, install the necessary toolboxes there.

**Missing compiler for mex**

Error message: Line 95 of fold\_slice/+utils/add\_to\_3D\_projection.m:

Error using mex

Supported compiler not detected. You can install the freely available MinGW-w64 C/C++ compiler; see Install MinGW-w64 Compiler. For more options, visit <https://www.mathworks.com/support/compilers>.

Explanation: Mex is the function that Matlab uses to compile C++ files, so it could run into error if there are no useable C++ compilers. We can check the compiler in use for mex by mex -setup and mex -setup cpp for C and C++. The suggested solution of using MinGW-w64 compiler, which comes as a Matlab add-on, does not work on the test with Matlab R2021b, for the latest fold-slice as of 1/17/22.

Solution: Download Microsoft Visual Studio 2019 Community version from <https://docs.microsoft.com/en-us/visualstudio/releases/2019/release-notes>, install with “Desktop Development with C++” option selected. Go to Matlab, if MinGW-w64 compiler is installed, remove it from Matlab Home > Add-Ons > Manage Add-Ons. Run mex -setup cpp to make sure that mex uses Visual C++ 2019 as its compiler. Then the problem should be gone.

**Add Gaussian blurring to diffraction patterns**

Blurring with a Gaussian kernel is added to ptycho/+engines/+GPU\_MS/private/get\_reciproval\_model.m, line 218. A blur kernel is created, then applied to aPsi2