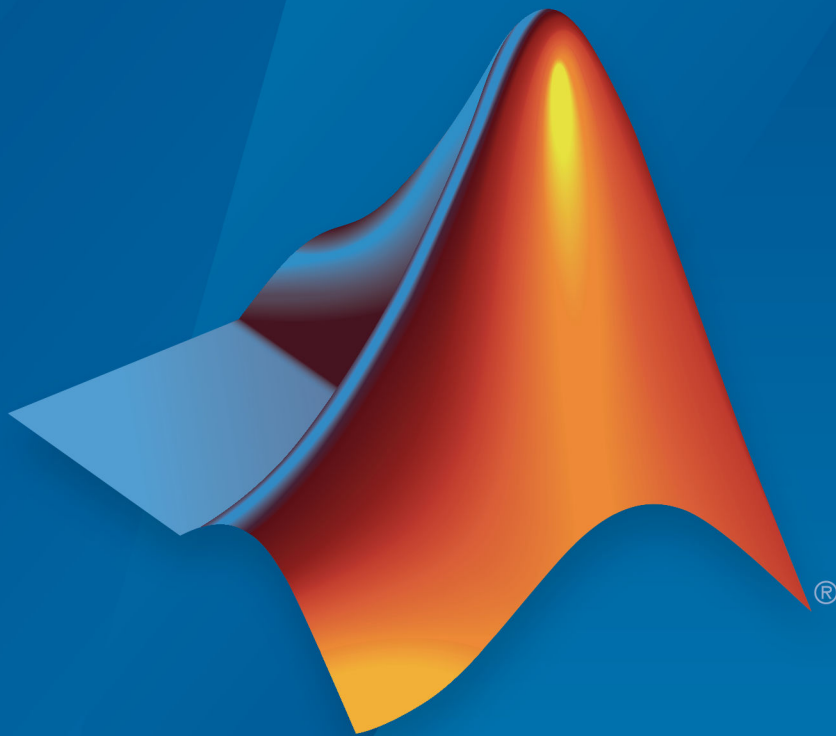Curve Fitting Toolbox™ Release Notes

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Curve Fitting Toolbox™ Release Notes

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Contents

R2017a

Bug Fixes

R2016b

No New Features or Changes

R2016a

R2015b

Bug Fixes

R2015a

Bug Fixes

R2014b

R2014a

Bug Fixes

R2013b

R2013a

R2012b

R2012a

R2011b

R2011a

R2010b

R2010a

R2009b

R2009a

R2008b

Bug Fixes

R2008a

Bug Fixes

R2007b

R2007a

Bug Fixes

R2006b

Bug Fixes

R2006a

No New Features or Changes

R14SP3

No New Features or Changes

R14SP2

R2019a

Version: 3.5.9

Bug Fixes

R2018b

Version: 3.5.8

Bug Fixes

R2018a

Version: 3.5.7

Bug Fixes

R2017b

Version: 3.5.6

Bug Fixes

R2017a

Version: 3.5.5

Bug Fixes

R2016b

Version: 3.5.4

No New Features or Changes

R2016a

Version: 3.5.3

Bug Fixes

Compatibility Considerations

Legacy Curve Fitting Tool Removed

The legacy Curve Fitting Tool has been removed. `cftool` no longer accepts –v1. Use `cftool` instead.

Compatibility Considerations

Functionality	What Happens When You Use This Functionality?	Use This Instead	Compatibility Considerations
`cftool -v1`	Errors	`cftool`. See Curve Fitting.	The legacy Curve Fitting Tool has been removed. Replace all instances of `cftool` –v1 with `cftool`.

R2015b

Version: 3.5.2

Bug Fixes

R2015a

Version: 3.5.1

Bug Fixes

R2014b

Version: 3.5

New Features

Bug Fixes

Exclusion Rules in Curve Fitting app

In the Curve Fitting app, you can exclude data from curve and surface fits by applying rules, for example, x > 0. For details, see Exclude Data Ranges.

In previous releases, you could only apply exclusion rules at the command line or by using the legacy Curve Fitting Tool.

R2014a

Version: 3.4.1

Bug Fixes

R2013b

Version: 3.4

New Features

Bug Fixes

Compatibility Considerations

Thin-plate spline interpolation available from the Curve Fitting app and the fit function

You can fit thin-plate spline surfaces in the Curve Fitting app and with the `fit` function. Use thin-plate splines when you require both smooth surface interpolation and good extrapolation properties.

In previous releases, you could use the `tpaps` function to fit thin-plate splines. However, the `tpaps` function has a different syntax from the `fit` function and requires manual preprocessing of data.

For details, see Interpolants.

Linear least-squares fitting for custom equations in the Curve Fitting app

In the Curve Fitting app, you can define custom linear equations that use linear least-squares fitting. Linear least-squares fitting is more efficient and usually faster than nonlinear fitting.

In previous releases, you could define linear equations in the Custom Equation fit type, but the toolbox used nonlinear fitting that was slower. To use linear least-squares fitting of custom linear equations, you had to use the legacy Curve Fitting Tool. You no longer need to use the legacy tool because you can use the Linear Fitting model type in the Curve Fitting app.

For details, see Custom Linear Fitting.

Functions and Function Elements Being Removed

Function Element Name	What Happens When You Use This Function Element	Use This Instead	Compatibility Considerations
`'Algorithm'`, `'Gauss-Newton'` name/value pair argument as input to `fitoptions` method	Errors	`'Algorithm'`, `'Levenberg-Marquardt'` name/value pair argument as input to `fitoptions` method	Use `'Levenberg-Marquardt'` as the value for `Algorithm` instead.

R2013a

Version: 3.3.1

Bug Fixes

Compatibility Considerations

Function with Compatibility Changes

New warning that the legacy Curve Fitting Tool will be removed in a future release.

Compatibility Considerations

Function	What Happens When You Use This Input	Use This Instead	Compatibility Considerations
`cftool -v1`	Opens the legacy Curve Fitting Tool and warns.	`cftool`	The legacy Curve Fitting Tool will be removed in a future release. Use `cftool` instead.

R2012b

Version: 3.3

New Features

Print to Figure option in Curve Fitting Tool that generates MATLAB figures, which can be modified and edited

You can now use the **Print to Figure** option in Curve Fitting Tool to produce MATLAB® figures from the results of curve fitting. You can then use the interactive plotting tools to edit the figures with fitting results for presentation purposes and export them in different formats.

In previous releases, to produce figures from your fits, you had to generate MATLAB code from your Curve Fitting Tool session. To recreate all your fits and plots, you then had to save and call the file from the command line using your original data or new data as input arguments.

See Exploring and Customizing Plots.

R2012a

Version: 3.2.1

New Features

Bug Fixes

Compatibility Considerations

Enhanced Plot Colormap and Markers

All plots in the Curve Fitting Tool have new colormaps and markers to enhance visibility of points and the fit. Plots with hundreds of points are much clearer because markers no longer have white surrounds. The new plots fix problems in previous versions when plotting thousands of points could make it impossible to see the fit.

Compatibility Considerations

On surface plots with the new colormap, red has switched from high to low values. Compare contour plots with the main surface plot to check high and low areas.

Functions with Compatibility Changes

Function Name	What Happens When You Use This Function	Use This Instead	Compatibility Considerations
`cflibhelp`	Warns that the `cflibhelp` function has been replaced by documentation.	List of Library Models for Curve and Surface Fitting in the documentation.	Use the documentation instead of `cflibhelp`.

R2011b

Version: 3.2

New Features

Bug Fixes

Compatibility Considerations

Unified Interactive Curve Fitting Tool

With the unified interactive Curve Fitting Tool, you can now fit curves and surfaces in the same GUI. The new Curve Fitting Tool has improved usability so you can choose data, fit types and plot settings within one window, without needing to open any separate dialogs. You can generate MATLAB code to recreate all your fits and plots. You can now zoom and pan on surface plots.

For information and examples, see Interactive Curve and Surface Fitting .

Functions with Compatibility Changes

Function Element Name	What Happens When You Use This Function Element	Use This Instead	Compatibility Considerations
sftool	Opens new Curve Fitting Tool, and warns that sftool function will be removed in a future release.	cftool	Use cftool instead.
cftool	Opens new Curve Fitting Tool.	N/A	Change in behavior to open new Curve Fitting Tool.

Curve Fitting Tool Compatibility Changes

Curve Fitting Tool in R2011b has some changes in behavior to previous releases of Curve Fitting Tool:

- No exclusion rules. You can exclude data graphically, but you cannot save exclusion rules.
- No analysis GUI. You can use command-line functions to achieve the same goals. See Analyzing Your Best Fit in the Workspace.
- No custom linear equations. You can define a custom linear equation, but the custom equation fit uses nonlinear fitting which is usually slower than linear least-squares fitting. If you need linear least-squares fitting for custom equations, you must use the legacy Curve Fitting Tool. See Custom Linear Models.

- Cannot load old sessions in the new tool. If you need to use old sessions, see the `cftool` help to access legacy Curve Fitting Tool.

R2011a

Version: 3.1

New Features

Bug Fixes

Fit with Anonymous Functions

The `fit` and `fittype` functions now accept anonymous functions. This enables you to use anonymous functions to define equations for curve fitting. Previously, `fittype` only accepted a text string or a cell array of text strings. Now you can also use anonymous functions, making it easier to pass other data into the function.

For more information, see the `fit` and `fittype` reference pages.

R2010b

Version: 3.0

New Features

Bug Fixes

New Spline Fitting

Curve Fitting Toolbox now contains all of the spline functions that were previously available in Spline Toolbox™.

Splines are smooth piecewise polynomials. You can use the spline functions to create and manipulate spline approximation models of data. You can create splines in piecewise polynomial form (`ppform`) and B-form.

The spline functions are a collection of algorithms for data fitting, interpolation, extrapolation, and visualization. The new spline features include a graphical user interface for creating, visualizing, and manipulating splines. Additional functions enable you to evaluate, plot, combine, differentiate, and integrate splines, manipulate breaks/knots, and optimally place knots.

For more information see Spline Fitting in the Curve Fitting Toolbox User's Guide.

New Data Selections in Surface Fitting Tool

In Surface Fitting Tool, you can select matrices of the same size, or you can also now fit surfaces to data stored as a table. "Table data" means that X and Y represent the row and column headers of a table and the values in the table are the values of the Z output. Sizes are compatible if X and Y are vectors of length n and m, and Z is a matrix of size [m,n]. For more details see Table Data in the Interactive Surface Fitting documentation.

Surface Fitting Tool can now read integer and floating-point data. You can now select any numeric data in your workspace. Previously the tool would only accept vectors of type `double`.

For more information see Interactive Data Selection in the Interactive Surface Fitting documentation.

R2010a

Version: 2.2

New Features

Bug Fixes

Compatibility Considerations

New Toolbar in Surface Fitting Tool

A new toolbar in Surface Fitting Tool makes it easier to discover and control plotting options. You can use the toolbar to:

- Toggle plot mode between Rotate 3D, Data Cursor, and Exclude Outliers
- Control which plots are displayed of Surface, Residuals and Contour plots
- Control the Legend, Grid and Axis Limits

See Exploring and Customizing Plots in the Surface Fitting Tool documentation.

Usability Improvements for Surface Fitting Workflow

In Surface Fitting Tool, plot mode now defaults to Rotate 3D. A common surface fitting workflow is to manipulate and view the surface plot from various angles. You no longer have to select plot rotate mode initially, because it is now on by default. You can use the toolbar to switch to data cursor or exclude outliers mode. When you turn off data cursor or exclude outliers mode, your cursor mode is automatically set back to Rotate.

See Using Zoom, Pan, Data Cursor, and Outlier Exclusion in the Surface Fitting Tool documentation.

The initial surface fit for polynomials is now a linear plane in **x** and **y** (`poly11`). Previously the default fit was a quadratic polynomial in **x** and **y** (`poly22`).

If you are going to use a polynomial to fit a model, it can be helpful to start by looking at a reference plane.

Improved Gaussian Library Model

The `gaussian` library model has been updated to use improved starting value defaults. You may see different answers to previous releases because of the improved starting values.

Functions and Function Elements Being Removed

Function Element Name	What Happens When You Use This Function Element	Use This Instead	Compatibility Considerations
`'Algorithm'`, `'Gauss-Newton'` property name/value pair as input to `fitoptions` method	Warns when you call the `fit` method	`'Algorithm'`, `'Levenberg-Marquardt'` property name/value pair as input to `fitoptions` method	Use `'Levenberg-Marquardt'` as the value for Algorithm instead.

R2009b

Version: 2.1

Bug Fixes

Surface Fitting Examples, Derivatives, and Volumes

New features introduced in this version:

- New surface fitting examples:

  - Example: Interactive Surface Fitting
  - Custom Nonlinear Surface Fitting Examples
  - Fitting Automotive Fuel Efficiency Surfaces at the Command Line
  - Example: Fitting Biopharmaceutical Drug Interaction Surfaces at the Command Line

- New function to compute the first and second derivatives of a fitted surface. See differentiate.
- New function to compute the volume under a fitted surface. See quad2d.

R2009a

Version: 2.0

New Features

Bug Fixes

Interactive Surface Fitting

You can interactively fit surfaces to data and view plots with the new flexible and intuitive Surface Fitting Tool GUI.

- Create, plot, and compare multiple surface fits
- Use linear or nonlinear regression, interpolation, local smoothing regression, or custom equations
- View goodness-of-fit statistics, display confidence intervals and residuals, remove outliers and assess fits with validation data
- Automatically generate M-code for fitting and plotting surfaces, or export fits to workspace for further analysis

For more information, see Example: Interactive Surface Fitting.

Programmatic Surface Fitting

New surface fit objects store the results from a fitting operation, making it easy to plot and analyze fits at the command line.

For more information, see Custom Nonlinear Surface Fitting Examples.

R2008b

Version: 1.2.2

Bug Fixes

R2008a

Version: 1.2.1

Bug Fixes

R2007b

Version: 1.2

New Features

Bug Fixes

Edit Custom Equations in Curve Fitting Tool

When using Curve Fitting Tool, you can now edit your custom equations without copying them. Buttons to **Edit** and **Copy and Edit** appear with the list of custom equations in the Fitting GUI.

R2007a

Version: 1.1.7

Bug Fixes

R2006b

Version: 1.1.6

Bug Fixes

R2006a

Version: 1.1.5

No New Features or Changes

R14SP3

Version: 1.1.4

No New Features or Changes

R14SP2

Version: 1.1.3

New Features

Prompt to Save Session

The `cftool` graphical user interface now prompts you to save your session when you quit only if you have changed something (created data sets, created fits, etc.) since your last save. Prior to this release `cftool` would unconditionally prompt you to save every time you quit.