Integrating SimDiff with git + GitExtensions

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Introduction

Git is a distributed version control system. The primary interface for working with git is the command-line, using commands such as git commit, git push, etc. However, there are a number of GUI tools that have been built on top of the command line that provide a more convenient interface for working with a repository. Some of these interfaces support interactive diff and merge tools - others do not.

The following instructions explain how to configure SimDiff for use with git while using the Git Extensions GUI tool.

The configuration for this Git client requires the usage of Tool Selector.

ToolSelector is a utility program developed by EnSoft that can be used to select between one or more configured tools based on certain properties of the input arguments (e.g. file type). For more information about ToolSelector, please refer to the ToolSelector User Guide.pdf located at your ToolSelector directory (by default, C:\Program Files\EnSoft\SimDiff\utils\toolselector).

Note: if you are using a SimDiff version older than 2020a.2, then the ToolSelector directory is C:\Program Files\EnSoft\SimDiff\utils\toolselector-20120215-1803

Configuration

- 1. Download gitExtensions-simdiff.zip from <u>https://www.ensoftupdate.com/download/simdiff/version-control-system/gitExtensions-simdiff.zip</u>
- 2. Copy the extracted files to your toolselector directory (by default, C:\Program Files\EnSoft\SimDiff\utils\toolselector).
- 3. Configure Git Extensions' external diff/merge tools as follows:
 - Open Git Extensions
 - Click Tools > Settings
 - Enter the following information in *Git Config* section under *Git Extensions* configuration (as shown in image below)

```
Mergetool: simdiff
Path to mergetool: C:/Program
Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe
Mergetool command: "C:/Program
Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe" -
profile=3way-merge $PWD $MERGED $REMOTE $BASE $LOCAL
```

```
Difftool: simdiff
Path to difftool: C:/Program
Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe
Difftool command: "C:/Program
Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe" -
profile=2way $PWD $LOCAL $REMOTE
```

🗙 Settings - Config			×							
Type to find	Settings source: O Glo	bal for all repositories								
 ✓ Off Extension's ✓ Off General > ● Appearance - Ø Revision links - Ø Build server integration - Ø Scripts - Ø Hotkeys - Ø Advanced > ● Otabled > Ø StH ✓ O Git - Ø Paths - Ø Paths - Ø Advanced 	User name User email Editor Mergetool Path to mergetool Mergetool command Difftool Path to difftool	Bob Smith bobsmith@ensoftcorp.com simdiff C/Program Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe °C/Program Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe °C/Program Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe °C/Program Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe °C/Program Files/EnSoft/SimDiff/utils/toolselector/toolselector.exe	Browse Suggest Browse							
> - 🎲 Plugins	Difftool command	"C:/Program Files/EnSoft/SimDiff/utis/toolselector/toolselector.exe" -profile=2way \$PWD \$LOCAL \$REMOTE	Suggest							
	Line endings Checkout Windows-style, commit Unix-style line endings ("core.autocr/f" is set to "true") Checkout as-is, commit Unix-style line endings ("core.autocr/f" is set to "input") Checkout as-is, commit as-is ("core.autocr/f" is set to "false") Not set									
	Files content encoding		Configure							
		OK Cancel	Apply							

Notes

- If SimDiff and ToolSelector are not installed to their default locations, you will need to modify the paths given in step 3 above.
- If ToolSelector is installed to a location other than its default location within the SimDiff directory, you will need to update simdiff-cd.bat with the correct absolute or relative path to simdiff4.exe.
- We strongly recommend using a 3-way diff as part of your merge process, because a 3way diff tells you not only what differs between two versions of a model, but also which changes were made in which model. 3-way diff is included in all editions of SimDiff.

Usage

To visualize differences between 2 versions of a model, you can click the *Open with difftool* menu option and Git Extensions will open SimDiff to visualize the differences. The image below shows this option when comparing an unstaged file with the copy in the repository.

🍥 Commit 📱	Diff	😤 File tree	🔑 GPG	🔳 Co	onsole	Dutput					
Filter files using a r	egular e	pression		•		diffgit	: a/	/aero_radmod.mdl b/aero_radmod.mdl			
(1) Diff with A 189	9ddc2: f	rst commit in	master —			index 0af7	'd6b	bacb606e 100644			
/ aero_radmod.m	ndl					a/aero	_ra	admod.mdl			
	÷	Reset file(s) t	0				•	00			
	6	Cherry pick	hanges					1.2 \$			
		Open with d	fftool				•	Second: B a99bb63a: master			
		Open workir	g directory	file with.		Ctrl+O		First: A 1899ddc2: first commit in master			
	P	Open this re	ision (temp	file)		Ctrl+F3		First -> Second			
	P	Open this re	vision with	(temp f	ile)	Ctrl+Shift+F3		Second -> Working directory			
		Save selected	as			Ctrl+S		First -> Working directory			
		Edit working	directory fi	e		F4		Remember Second for diff			
		Copy path(s)					×	Remember First for diff			
		Show in folder						References 0			
	P28	Show in File	tree			Т		pintedSignals 0			
	T	Filter file in g	rid			F	F 9 @@ Model {				
	Ť	File history				н		Format "% <auto>"</auto>			
	*	Blame				В		edBy "Sergio"			
		Find file						terormat "% <auto>"</auto>			
	Q	Find in com	nit files usir	q qit-qr	ер	Ctrl+Shift+F		edDate "Thu Sep 17 10:44:29 2015"			
	Show 'Find in commit files using git-grep'							dTimeStamp 0			
					9 9	F		_onFormat "1.% <autoincrement:<mark>36>"</autoincrement:<mark>			
	az	Sort by					•	pnFormat "1.% <autoincrement:40>"</autoincrement:40>			
				54	54	Configu	irat	tionManager "none"			
				55	56	Lineari	7a+	tionMsg "none"			
				50	50	cincur i					

Similarly, SimDiff can be launched when Git Extensions detects a merge conflict. This section shows the workflow to be followed when merging a branch to the currently checked out branch.

To start, right click the branch to be merged and follow steps described in the images below.

🄀 test_repo (master) - Git Extensi	ons				
Start Repository Navigate	View Co	mmands Gith	nub Plugi	ins	Tools Help
🗇 💿 🗸 C:\repos\git\test_rep	🗸 🝷 master	• 🎼 • 🥑 Co	mmit 👃	-	📔 🚍 🔐 Branches:
master Changes in mas	er branch				
dev Changes in dev branch	Copy to	clipboard		•	
Added first model	Checko	ut branch		<u> </u>	1
	Merge i	into current brar	h	•	dev
	∩ Rebase	current branch	on	•	uev
	🙍 Reset ci	urrent branch to	here		
	🏠 Create i	new branch	Ctrl+B		-
	🛟 Rename	e branch		•	
	🙀 Delete l	branch		•	







X Resolve merge conflicts	- • •
Unresolved merge conflicts	Open in simdiff4
Filename	openinainain
aero_radmod.mdl 5	Start mergetool
_	Rescan merge conflicts
	Abort merge
The file has been changed both locally(ours) and remotely(theirs). Merge the changes.	
Local aero_radmod.mdl	
Base aero_radmod.mdl	
Remote aero_radmod.mdl	
E Help	

In this dialog, click *Start mergetool* button to launch SimDiff to merge the changes.



Use SimDiff to merge the changes. Once you are done, save the model from the Simulink window and close SimDiff. The next dialog will show up.



X Commit to master (C:\repos\git\test_repo\)		- • •
Commit to master (C:\repos\git\test_repo\) Curve Gamma Gamm	<pre># \$Revision\$ Model { Name "aero_radmod" Version 7.0 MdlSubVersion 0 GraphicalInterface { NumRootInports 0 ParameterArgumentNames "" <<<<<<< HEAD ComputedModelVersion "1.40"</pre>	
1	SavedChar 8 Encoding "US-ASCII"	• • • • • • • • • • • • • • • • • • •
	Commit Commit message • Commit templates •	Options •
	Commit & push	
	Amend Commit # Conflicts: # aero_radmod.mdl	
	Reset all changes	
	Reset unstaged changes	
Committer Sergio Ferrero <sferrero@ensoftcorp.com< th=""><th>> 🎲 The master Staged 1/2 Ln (</th><th>0 Col 0:</th></sferrero@ensoftcorp.com<>	> 🎲 The master Staged 1/2 Ln (0 Col 0:

Finally, commit the merged model.