Last edited: 21.10.2015

#### HOW TO: CONRAD Installation for DMIP

This tutorial describes how to install the open-source package of CONRAD.

#### Installation of CONRAD

First, you need to check-out the open-source repository from https://github.com/akmaier/CONRAD

To successfully do this, you will require

 Your own Github Account, Username <GitHubAccountName>, on <u>https://github.com/</u>

In the top right on <u>https://github.com/akmaier/CONRAD</u> you should see a button labeled "Fork". Click this button to generate your own personal copy of the repository. Afterwards you will find your repository at <u>https://github.com/<GitHubAccountName>/CONRAD</u>.

#### Using git on a Linux Shell:

Now, we create a new folder on the disk that will be used as a workspace for **Eclipse**. Open a shell and go to /proj/i5dmip ("cd") and create a new folder for your workspace ("mkdir"). You may call this folder e.g. "/proj/i5dmip/<YourCIPLoginName>/Reconstruction/". Clone the repository using "git clone <u>https://github.com/<GitHubAccountName>/CONRAD.git</u> /proj/i5dmip/<YourCIPLoginName>/Reconstruction/CONRAD".

#### Installing CONRAD:

Now, you should be able to start CONRAD as an Eclipse project.

In order to setup a CONRAD installation, a computer is required that is able to run <u>Reclipse</u> and a current <u>RJava</u> installation (Version > Java 1.7.0). If this is available and you already cloned your personal Git Fork, simply start eclipse and choose the CONRAD directory as your workspace during the startup of eclipse.

Eclipse crashes on startup: Go to your home directory and remove your .eclipse settings folder:

"rm -r .eclipse/"

## Workspace Selection

Workspace	Launcher	×
Select a wo	o <b>rkspace</b> stores your projects in a folder called orkspace folder to use for this sessio	d a workspace. n.
Workspace:	Dilsrc ngs	▼ Browse
?		OK Cancel

Start eclipse. If used for the first time, it will ask for a workspace location as shown in the figure on the right. Please select /proj/i5dmip/<YourCIPLoginName>/Reconstruction/ in this dialogue. If you already have an eclipse workspace set up, you either need to change the present workspace to /proj/i5dmip/<YourCIPLoginName>/Reconstruction/ or you need to move the CONRAD folder to your present workspace.

#### New Workspace

Close the welcome screen when opening eclipse for the first time.

			10 0 0 x x
	Welcome to Eclipse		
2	Overview Get an evenies of the features	Go through tutorials	
-	Samples Try out the samples	What's New Find out what is new	

In case you switched your workspace to /proj/i5dmip/<YourCIPLoginName>/Reconstruction/ or in case you have a new installation of eclipse, the screen on the right will appear. Please close the welcome screen.

### New Java Project

Package Explorer 🕸					
	New	•	3	Java Project	
	Show In Copy Copy Qualified Name Paste Delete Import	Alt+Shift+W > Ctrl+C e Ctrl+V Delete		Project Package Class Interface Enum Annotation	
4	Export Refresh	F5		Source Folder Java Working Set Folder File Untitled Text File JUnit Test Case Other	Ctrl+N

Right click the package explorer to create a new Java project.

Once the normal layout of eclipse was loaded, the CONRAD project needs to be created. In a new workspace, the package explorer will show up empty. Right click the package explorer and create a new Java Project as shown on the right.

### **Project Import**

Enter "CONRAD" as project name to import the project from disk.

New Java Project		
Create a Java Project Create a Java project in the workspace or i	n an external location.	
Project name: CONRAD		
Use default location		
	CONRAD	Browse
JRE		
Use an execution environment JRE:	JavaSE-1.6	*
🔿 Use a project specific JRE:	jre7	-
O Use default JRE (currently 'ire7')	C.	onfigure JREs
<ul> <li>Use project folder as root for source</li> <li><u>C</u>reate separate folders for sources a</li> </ul>	s and class files ind class files <u>Con</u>	figure default
Working sets		
Add project to working sets		
Working sets:	•	Select
<ol> <li>The wizard will automatically config existing source.</li> </ol>	jure the JRE and the project layou	t based on the
?) < <u>B</u> ack	Next > Einish	Cancel

A dialogue called "New Java Project" will appear. Enter "CONRAD" as Project name. Next, the message "The wizard will automatically configure the JRE and the project layout based on the existing source." will appear. Click "Finish" to import the project.

### Package Representation

We recommend "Hierarchical" package representation.

Package Explorer 🖾 👘				
8	~			
a 🥵 src		Top Level Elements		
diff (derauit package)		Select Working Set		
edu.stanford.rsl.apps.gui		Deselect Working Set		
edu.stanford.rsl.apps.gui.bl		Edit Active Working Set		
edu.stanford.rsl.apps.gui.pd	100	1 Window Working Set		
edu.stanford.rsl.conrad			1	
👂 🌐 edu.stanford.rsl.conrad.calil	*	Filters		
edu.stanford.rsl.conrad.cud		Package Presentation	E	Flat
edu.stanford.rsl.conrad.cud	~	Show 'Referenced Libraries' Node	E	Hierarchical
edu.stanford.rsl.conrad.data edu.stanford.rsl.conrad.data	4	Link with Editor	Г	
edu.stanford.rsl.conrad.data	-12		_	

As CONRAD contains a lot of classes and packages, it is difficult to gain an overview for a beginner. Thus, we recommend to switch the package representation to "Hierarchical" as shown on the right. Click the small triangle on the top right of the package explorer to do so.

### Creation of a Default Config File

Click "Yes" to create a default config file.

, cicce	an option			
?	No config fil	le found. (	Create default	config?

CONRAD stores an XML-based configuration file in the user's home directory to save the current configuration. If the file is not found the system will prompt whether the file should be created or not. If this dialogue appears, please select "Yes".

### Running the Main GUI

Select the ReconstructionPipelineFrame to run the main GUI



The main GUI of CONRAD is called Reconstruction Pipeline frame. It can be executed from the package explorer as shown on the right. Browse to the package "edu.stanford.rsl.apps.gui" and select the ReconstructionPipelineFrame. Right click it and select "Run As/Java Application".

### Main GUI

The reconstruction pipeline frame.

ingulation cut	
	CONe-beam framework for RADiology (CONRAD) Reconstruction Pipeline
Projection D	Data: Choose
	Use Current ImagePlus
Output	
Output Image Plus Projectio	Choose Output

If everything was set up correctly, you should now be able to run the main GUI shown on the right. It is the main application to use most of CONRAD's functionality.

# Further GIT commands

#### Save work locally on disk:

Execute "git commit -a" and enter a meaningful commit message + save

#### Save work to your Github fork:

Do a commit first (see above) then execute "git push", enter your account details. This updates your personal fork on Github.

Updating locally in case your fork changed from somewhere else, e.g. at home:

Execute "git pull" before you start working

#### Syncing with the original CONRAD repository:

In order to sync your own repository with "akmaier/CONRAD" you need to do the following steps:

**If you do this for the first time** you need to tell your git where the original CONRAD is. Therefore, set a new remote repository: "git remote add akmaierConrad <u>https://github.com/akmaier/CONRAD.git"</u>

To perform the synching, simply apply the next three commands:

- 1) Fetch the branches from the remote: "git fetch akmaierConrad"
- 2) Checkout your forks master branch: "git checkout master"
- 3) Merge the changes: "git merge akmaierConrad /master"