Documenting LArSoft
for
Ease of Use and Learning

LArSoft Workshop
June 22, 2016

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LArSoft Documentation

1. LArSoft Doxsvn **– Comments in the code** in a format that enables Doxygen to interpret them. Have template - Code Documentation Guidelines.
2. LArSoft wiki – (Redmine) covers everything from getting started to details on code and releases
3. http://larsoft.org/ - one-stop spot with links to other things (and useful things there as well)
4. larforum.org – forum hosted by the University of Manchester to discuss LArTPC software – slides from Andrzej Szelc

Too much? Too little? About right?

LArSoft wiki (Redmine)

Quick Links – to experiment-specific information on getting started.

Introduction to LArSoft

LArSoft is both a project/collaboration and a body of code.

Using LArSoft

This covers the preliminaries needed to get started, where to find releases, using LArSoft with your experiment and where to find the software.

Developing With LArSoft

Developing LArSoft code itself. Using LArSoft to write experiment-specific code against an existing LArSoft release.

CI results display page

Getting LArSoft

Local installation of LArSoft, and builds.

LArSoft Internals

Topics of interest to people supporting LArSoft.

Miscellaneous Links

Information that may be of historical interest, or that is under development.

Have a page you'd like updated soon?
Email klato@fnal.gov

Larsoft.org

- http://larsoft.org/ - general documentation, not code or release specific, good place to start
    - [Concepts in LArSoft](#) – big picture understanding of LArSoft design and structure
    - http://larsoft.org/list/ - list of algorithms
    - http://larsoft.org/notes/ - news of interest
    - Meetings, upcoming activities, etc.

Larsoft.org

Concepts in LArSoft

Basic steps in a simulation

Geometry

Reconstruction Steps

Algorithms

Services

Designing, Coding and Testing LArSoft

Help LArSoft users understand the big picture of what is going on within the code.

- not specific code examples
- lay the foundation for conceptual understanding.

Any suggestions for other pages?

Anywhere on the site?

LArSoft Notes (Newsletters)

Available at http://larsoft.org/notes/

- Opening the box: event reconstruction using Pandora – June 2016
- Concepts in LArSoft, CI, Algorithms – April 2016
- LArSoft forum, redmine – February 2016
- What is INSPIRE for LArSoft Notes? – December 2015
- Updating Redmine, Links to Quick Start Guides – November 2015

If you'd like to write an article, Please let me know.

Documenting Algorithms

- http://larsoft.org/list/ - Documentation about algorithms.
- https://larsoft.org/add/ - Can add information to the database without being a WordPress user.

EMSHOWER	Michael Wallbank	Takes output cluster and track finding and combines information to make complete 3D shower
BlurredCluster	Michael Wallbank	Converts a hit map into a 2D image before convolving with a Gaussian function to introduce a weighted blurring., and proceeding on this blurred image to create more complete clusters.
Fuzzy Cluster	Benjamin Carls	A 2D clustering algorithm that attempts to ID shower and track like objects
Track3DKalmanHitAlg	Herbert Greenlee	Reconstructs tracks applying Kalman filter on hits.

The Implementation Plan

"By the beginning of FY17 SCD will implement a means for tracking and reporting contributions to LArSoft. This information will be kept in a code repository and available publicly. Sufficient information will be maintained to allow members of the Coordination and Steering Groups to provide recommendations based on the contributions made."

Current Situation

The list of algorithms and owners is a component of this – http://larsoft.org/list/
Includes fields for code analyzed and improved code released. (Can sort on different fields.)

code analysis done	☐ Check if true.
Improved code released	☐ Check if true.

Questions?

Future Plans

Have a list of publications and reports with attributions perhaps using - Fermilab Technical Notes – http://techpubs.fnal.gov/

Search DocDBs for each experiment to look for ones that should be common. Experiments need to:

1) Grant permission to search
2) Be willing to have the document also appear or be linked from a common LArSoft document repository.

Algorithm Record Page

Be sure you are on a page that begins with https, or your updates will not be saved.

Note, you may edit the details of your algorithm multiple times. Just be sure to hit save at the bottom if you've made changes you'd like to keep. (After clicking on Save, you will remain on the same page for further editing if you want.)

ALGORITHM NAME	Tmp to test fields	REQUIRED FIELD
AUTHOR NAME	Katherine Lato	full name
EMAIL	klato@fnal.gov	REQUIRED FIELD
ONE LINE DESC	Just a test of new fields	

LOCATION IN CODE

[input field] location in the code (repository and path of the header, e.g. larreco/larreco/RecoAlg/GausHitFinder.h)

ALGORITHM CATEGORY

3D trajectory reconstruction
3D vertex reconstruction
particle hierarchy reconstruction
other

Pick all options that apply.

OTHER AUTHORS

(URL) | Link Text

All algorithm owners (if more than one)

CODE ANALYZED

☐ Check if true.

IMPROVED CODE RELEASED

☐ Check if true.

WEBSITE, BLOG OR SOCIAL MEDIA LINK

(URL) | Link Text

Put the URL in the left box and the link text that will be shown on the right

SAVE YOUR CHANGES

[Save]

Want to try this?

Attend small group discussion led by Katherine Lato this afternoon。

Documenting an Algorithm: Putting it all together

1. http://larsoft.org/list – high level view of the algorithm
2. Technical note
   - could be an internal (to LArSoft community) note, or
   - published paper like in http://techpubs.fnal.gov/ or elsewhere
3. Comments in the header and in the implementation code should be in a format that enables Doxygen to interpret them. Also describe important parts in the code.

    See LArSoft wiki (Redmine) page Code Documentation guidelines for suggested template to follow.
4. Don't forget in-line comments in the code for maintainability.

Questions?

LArFORUM
www.larforum.org

FORUM

LArSOFT 101
A Young Coder's first guide to all things LArSoft.
Moderator: wketchum

Tips, Tricks and HowTos
A forum, wherein a young LArSofter may share his knowledge and exploits with his peers.
Moderator: wketchum

Discussion of Algorithms
A forum ti discuss the intricacies of algorithms.
Moderator: wketchum

The Valley of Despair
A place to signal the malfunctioning of Modules, Services or LArSoft in General in the hopes that some gentle soul will fix the problem.
Moderator: wketchum

LArIAT
Problems specific to LArIATSoft
Moderator: wketchum

LArSoft upgrade to version 5
Stuck with upgrading your LArSoft feature branch from v4 to v5? wondering about new features of v5?
Discuss it here.
Moderators: wketchum, petrillo, jasaadi, davidc1, adams, kterao

LArFORUM
www.larforum.org

λA forum provides a compromise between a quick-response chat and archiving capabilities.

λCurrently hosted at University of Manchester

λStarted as MicroBooNE, evolved to all-LArSoft:

LArSOFT 101 A Young Coder's first guide to all things LArSoft. Moderator: wketchum	29	89	by GVSinev Fri May 13, 2016 6:45 pm	
Tips, Tricks and HowTos A forum, wherein a young LArSofter may share his knowledge and exploits with his peers. Moderator: wketchum	9	27	by klato Tue Apr 05, 2016 10:55 am	
Discussion of Algorithms A forum ti discuss the intricacies of algorithms. Moderator: wketchum	4	5	by andrzej Wed Feb 03, 2016 10:29 am	
The Valley of Despair A place to signal the malfunctioning of Modules, Services or LArSoft in General in the hopes that some gentle soul will fix the problem. Moderator: wketchum	43	162	by petrillo Mon Apr 25, 2016 5:17 pm	
LArIAT Problems specific to LArIATSoft Moderator: wketchum	7	27	by GVSinev Thu May 19, 2016 10:17 pm	

λExperiment-specific sections (e.g. LarIAT) are also possible

LArFORUM
www.larforum.org

λNotifications through email (alerts, digests) and chat (jabber) settable by user.

λHave set-up daily digests going to mailing lists (e.g. MicroBooNE, LArIAT) – let Andrzej know if you want one.

λBoth lead to quick responses from experts and other users.

λJoin and ask questions!