



IRIS-HEP area SSC

Sudhir Malik (Univ. of Puerto Rico Mayaguez)
Peter Elmer (Princeton University)

Mailing lists

hsf-training-wg@googlegroups.com

full-team@iris-hep.org

IRIS-HEP Advisory Board Meeting/ Retreat
Fermilab/Chicago, 9-13 Sep 2019

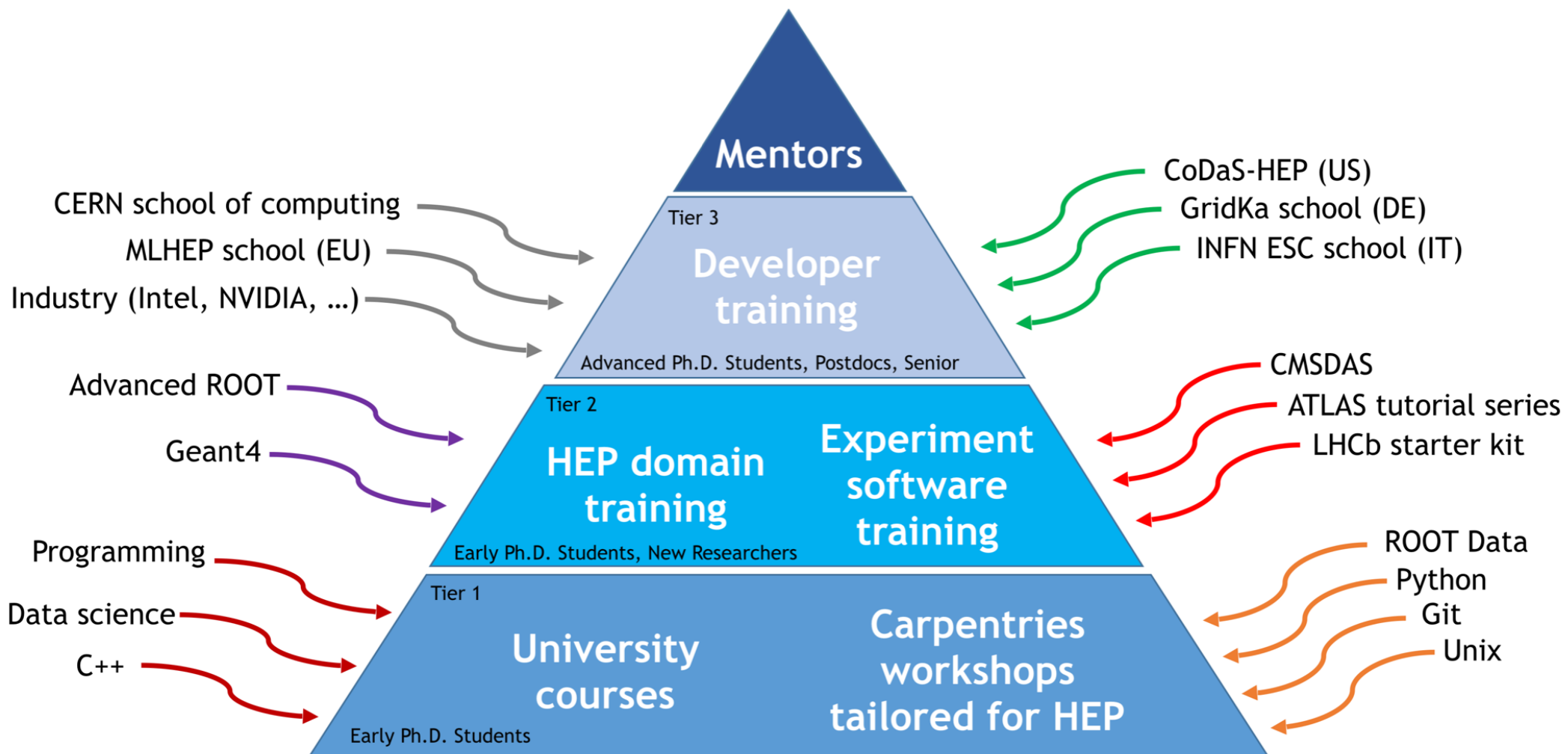


Training Goal

- ▶ Establish a *community framework for software training* in order to prepare the scientific and engineering workforce required for the computing challenges of HEP experiments
- ▶ For sustainability , *build “users” community* as well as *“developer” community*
- ▶ Instead of new curriculum development *leverage and build upon existing material* from the HEP and larger research community
- ▶ *Build training activities and material into a “common good”* with a strong community of both instructors and participants, and with a feeling of *community ownership*

Training Vision

HEP Software Training



Milestones and Deliverables at a glance

| Type | Time | Description | WBS task | Risks | Metrics |
|------|-------|---|----------|------------|---------------------|
| M | 3-9 | Co-organize (with FIRST-HEP) introductory level Software Carpentry (bash/git/python) workshop at Fermilab combined with topical discussion on interoperability of ROOT for advance PhD students | 5.1 | | M.5.1, M.5.5 |
| M | 3-9 | Introductory level Carpentry session for CMS/ATLAS at CERN | 5.1 | | M.5.1, M.5.5 |
| M | 0-6 | Invite LHCb/ALICE to showcase Starterkit on pre and first analysis steps | 5.1 | R5.1 | M.5.6 |
| D | 6-9 | Carpentries curriculum for HEP for newcomers at a LHC/ FNAL Experiments | 5.6 | | M.5.1, M.5.3, M.5.6 |
| M | 6-9 | Post-training co-survey with FIRST-HEP on better assessing training needs | | | M.5.7 |
| M | 6-9 | Retune next Carpentry workshop benefiting from above participant survey | | | M.5.7 |
| M | 9-12 | Organize and run CoDaS-HEP School (Parallel Programming, ML, Big Data Tools) at Princeton | 5.1 | R5.2 | M.5.2, M.5.5 |
| M | 6-9 | First brainstorming workshop in conjunction with CoDaS-HEP school to re-visit software and data challenges and correspondingly design future training material and workshops | 5.3 | R5.1 | |
| M | 6-9 | Summer Outreach Workshop (s) on building software skills at US universities | 5.3 | R5.1 | M.5.3, M.5.5 |
| M | 6-9 | Second HEP Software Carpentry Workshop at a US university/Lab | 5.3 | R5.1 | M.5.5 |
| D | 9-12 | Carpentries curriculum for HEP using best practices for HEP | 5.6 | R5.1, R5.2 | |
| M | 12-15 | Co-organize (with FIRST-HEP) boot camp on domain specific topics like advanced ROOT, Geant4 and other HEP-specific tools | 5.3 | R5.1 | M.5.2, M.5.4 |
| M | 12-15 | First Data Carpentry Workshop catered to HEP needs (expert input from CoDaS-HEP tutors and IRIS-HEP Fellows and field experts) | 5.3 | R5.2 | M.5.1, M.5.5 |
| D | 12-15 | Software and Data Carpentry Workshops for HEP community by IRIS-HEP program, IRIS-HEP Fellows form a community of tutors for workshops and future domain specific topics | 5.3, 5.6 | R5.1, R5.2 | M.5.3, M.5.5 |
| M | 18-21 | Summer Outreach Workshop(s) on building software and data analytical skills at US universities supported by IRIS-Undergrad Fellows and IRIS-Fellows in their own community, "Hack week" as a model for data science education and collaboration | 5.3 | R5.1 | M.5.3, M.5.5 |
| M | 18-21 | Organize and run CoDaS-HEP at Princeton | 5.3 | R5.1, R5.2 | M.5.2, M.5.5 |
| M | 18-21 | Second brainstorming workshop in conjunction with CoDaS-HEP school to re-visit software and data challenges preparedness in terms of training material | 5.3 | R5.1 | M.5.7 |

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Software Carpentry Workshop (1-2 April 2019, Fermilab)

<https://indico.fnal.gov/event/20233/>

Survey: pre-workshop: <https://www.surveymonkey.com/results/SM-X7BFFPY3V/>
Survey: post-workshop : <https://www.surveymonkey.com/results/SM-9LFC6FY3V/>

Software Carpentry at CERN (27-29 November 2019)

<https://indico.cern.ch/event/834411/>

HEP Software/Computing Training Survey (Feb, 2019)

[LINK to the survey](#)

CoDaS-HEP (22-26 July, 2019, Princeton)

<http://codas-hep.org>

Brainstorming - IRIS-HEP Institute Retreat (12-13 Sept. 2019 Fermilab)

<https://indico.cern.ch/event/840472/>

An introduction to programming for STEM teachers (3-4 June, UPRM)

<https://indico.cern.ch/event/817539/>

Machine Learning Workshop/Hackathon (24-26 April 2019, UPRM)

<https://indico.cern.ch/event/809812/>

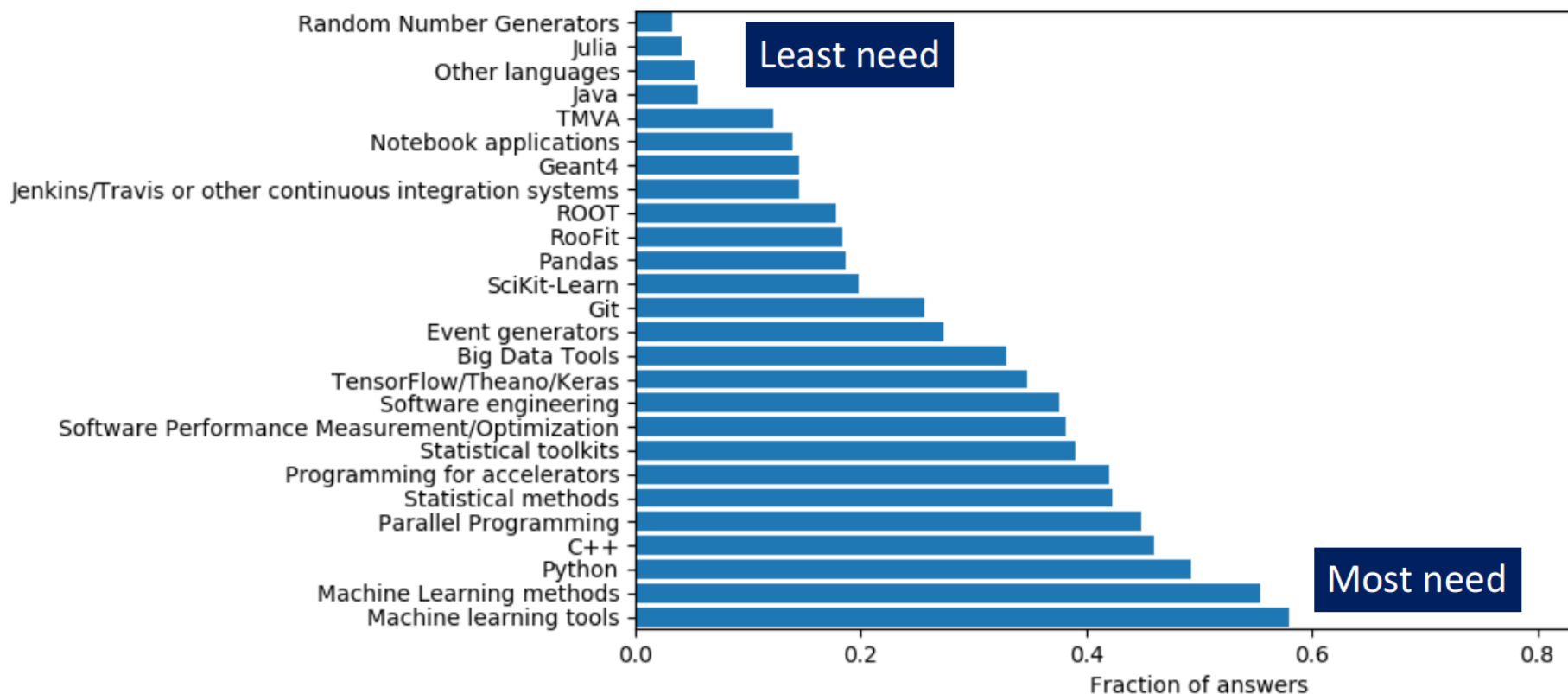
~ 180 people trained

More info on events:
<https://iris-hep.org/>

Training Survey (Jan-Feb 2019)

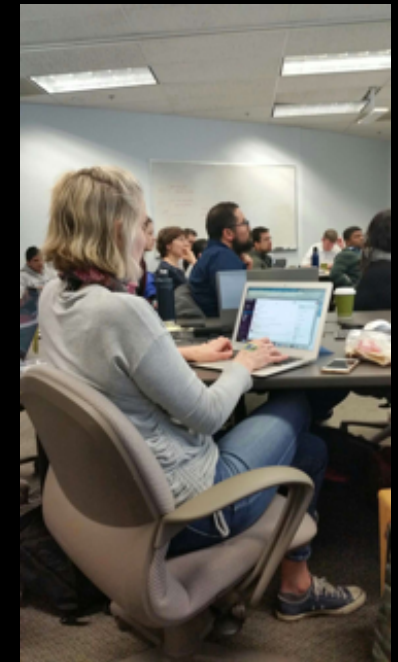
- ▶ Input on training needs and current training practices for various topics in HEP related to software/computing and related software centric areas
- ▶ ~ 350 users (mostly postdocs, students, mostly LHC)

Areas that need for more training materials/courses to help your research



Software Carpentry Workshop (Fermilab)

(1-2 April 2019)



- ▶ Agenda: <https://indico.fnal.gov/event/20233/>
- ▶ Version Control with Git
- ▶ Python Foundations
- ▶ Building Programs with Python
- ▶ Data analysis - Numpy, Pandas
- ▶ Data analysis Cont. and Graphs
- ▶ Advanced Python and PyROOT, uproot
- ▶ Post-workshop Survey

ML Hackathon (Puerto Rico)

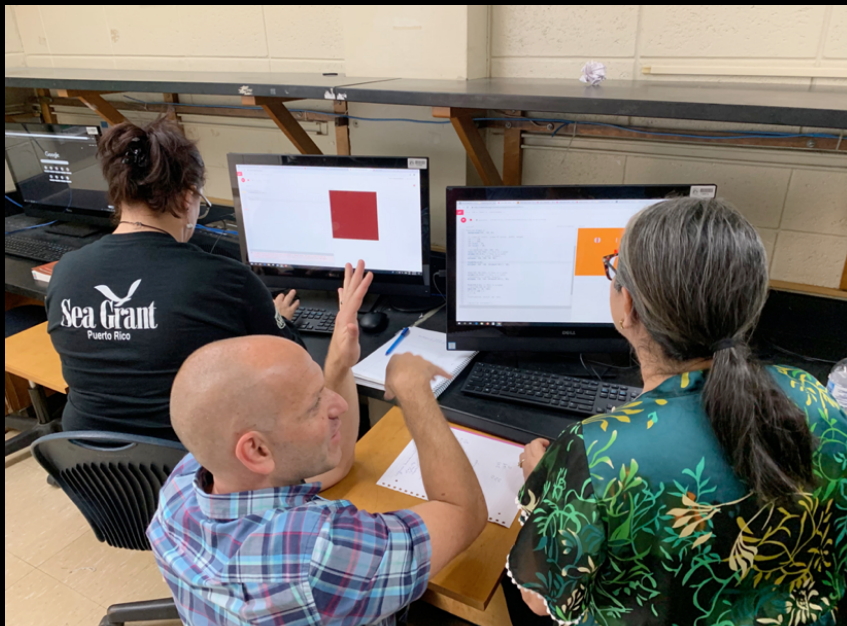
(24-26 April, 2019)

<https://indico.fnal.gov/event/20233/>



- ▶ Agenda: <https://indico.cern.ch/event/809812>
- ▶ Talks ML/Data science Applications - Physics, Computer Science, Math, Engineering
- ▶ Machine Learning, Deep Learning, ANN
- ▶ Hands-on exercises
- ▶ Hackathon on LHC Physics

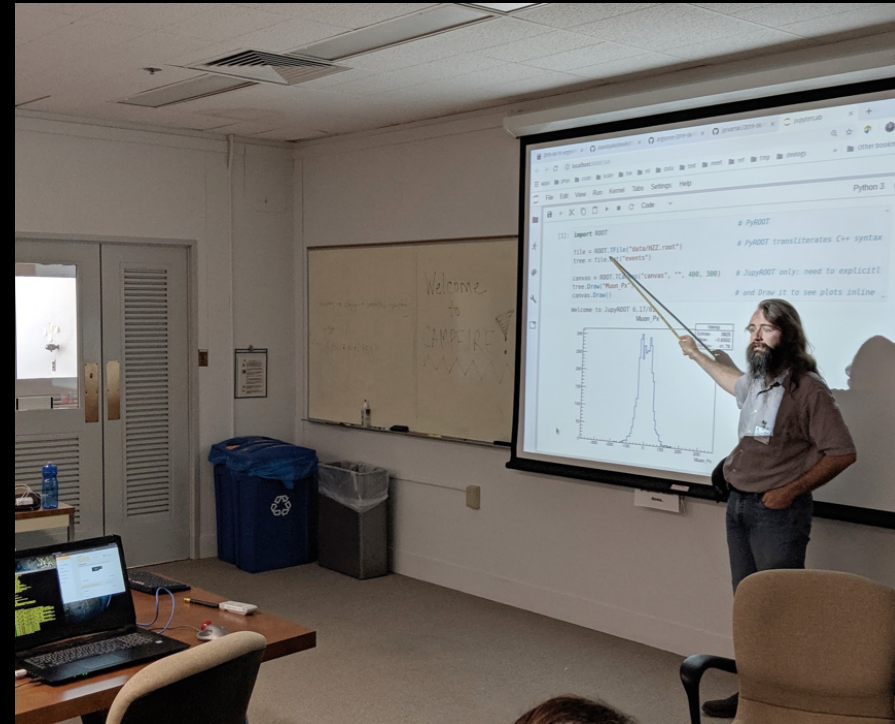
An introduction to programming for STEM teachers (Puerto Rico) (4-5 June, 2019)



- ▶ Agenda: <https://indico.cern.ch/event/817539>
- ▶ Introduction to Processing and p5js
- ▶ Python and Colab
- ▶ Basics of python, Jupyter notebooks, and Colab (hands-on)
- ▶ Data analysis with python

FIRST-HEP/ATLAS Training (Argonne)

(10 June, 2019)



- ▶ Agenda: <https://indico.cern.ch/event/827231/>
- ▶ A little Unix
- ▶ A lot of Git
- ▶ Numpy introduction
- ▶ PyROOT
- ▶ uproot

3rd CoDaS-HEP School (Princeton)

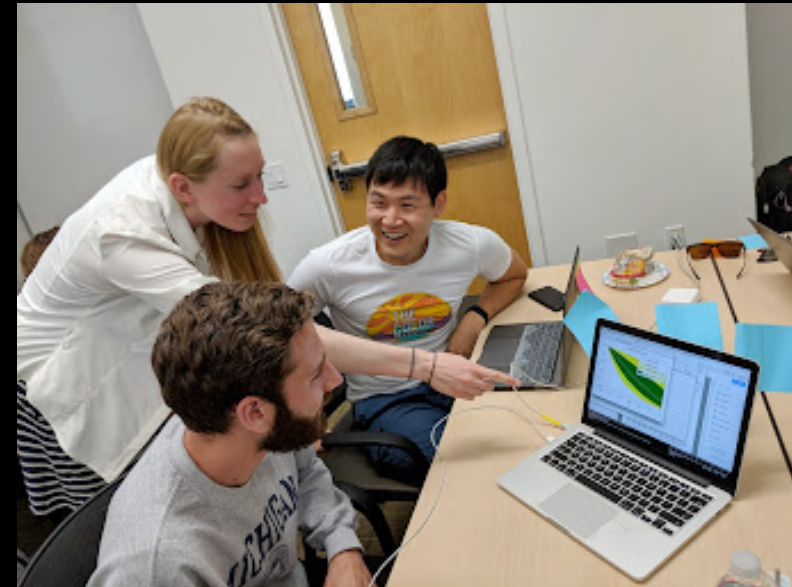
(22-26 July, 2019)



- ▶ Agenda: <https://codas-hep.org/>
- ▶ Parallel Programming
- ▶ Scientific Python Ecosystem
- ▶ Big Data Tools and Techniques
- ▶ Machine Learning
- ▶ Practical skills like performance evaluation, use of git

FIRST-HEP/ATLAS Training (LBNL)

(19-21 August, 2019)



- ▶ Agenda: <https://indico.cern.ch/event/816946/>
- ▶ Version Control Essentials
- ▶ Jupiter
- ▶ Build Systems : From gcc to cmake
- ▶ Continuous Integration : Why and how?

IRIS-HEP Fellows Program

- ▶ Promote the development of advanced research software skills by providing opportunities for undergraduate and graduate students to connect with mentors within the larger HEP and Computational/Data Science community
- ▶ Preparing for a more formal/organized call soon for projects and proposals for a round of fellows in the fall
- ▶ More info: <http://iris-hep.org/fellows.html>

Current IRIS-HEP Fellows



Raghav Kansal

University of California,
San Diego

IRIS-HEP Fellow

Jun-Aug 2019



**Pratyush (Reik)
Das**

Institute of Engineering
& Management (Kolkata)

IRIS-HEP Fellow

Jun-Sep 2019

Summary/Plans

- ▶ Training has picked up momentum
- ▶ In partnership with Software Carpentries:
<https://software-carpentry.org/>
- ▶ First training event outside US (at CERN)
- ▶ Blueprint meeting at Fermilab this month
- ▶ Carpentries instructor training this fall
- ▶ Scale the activities and iterate the curriculum
- ▶ JLAB interest in training
 - ▶ Staff members interested in expanding training opportunities for staff and users and train a couple to as serve an instructors
 - ▶ In conversation to organize software training event
- ▶ Spread activities to other labs/experiments/non-HEP

Related Links/Info

- ▶ IRIS-HEP website <http://iris-hep.org/>
 - ▶ Jobs on IRIS-HEP and Collaborating Projects <http://iris-hep.org/jobs>
 - ▶ General public announcement mailing list for IRIS-HEP events, talks, meetings, workshops, opportunities for training and job opportunities (subscribe to) announcements@iris-hep.org

- ▶ HSF (HEP Software foundation) - <https://hepsoftwarefoundation.org>
 - ▶ General Information about HSF (subscribe to): hsf-forum@googlegroups.com
 - ▶ Discussions and activities in the HEP Software Foundation mailing lists can be found here (General and Dedicated Forums): <https://hepsoftwarefoundation.org/forums.html>
 - ▶ You can contribute <https://hepsoftwarefoundation.org/cwp/cwp-working-groups.html>
 - ▶ HSF Events/Workshops - <https://hepsoftwarefoundation.org/events.html>

- ▶ FIRST-HEP website <http://first-hep.org>
 - ▶ Funding for participants and lecturer support for Training