ECFA-ECR WG on

SW/ML applications for Instrumentation

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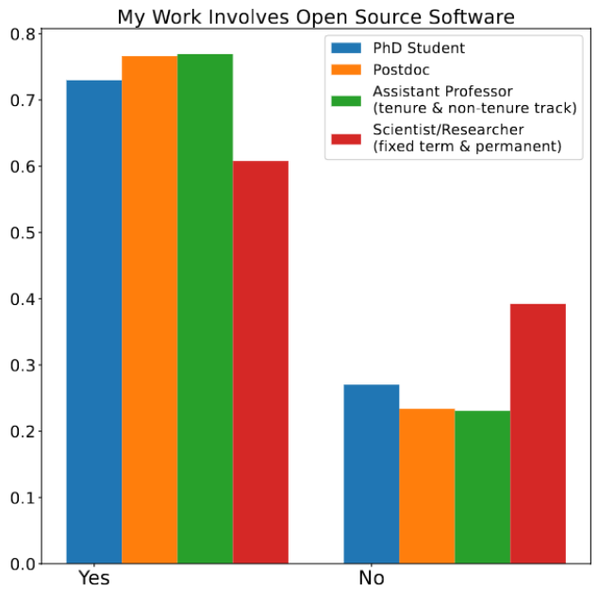
ECFA ECR Panel meeting

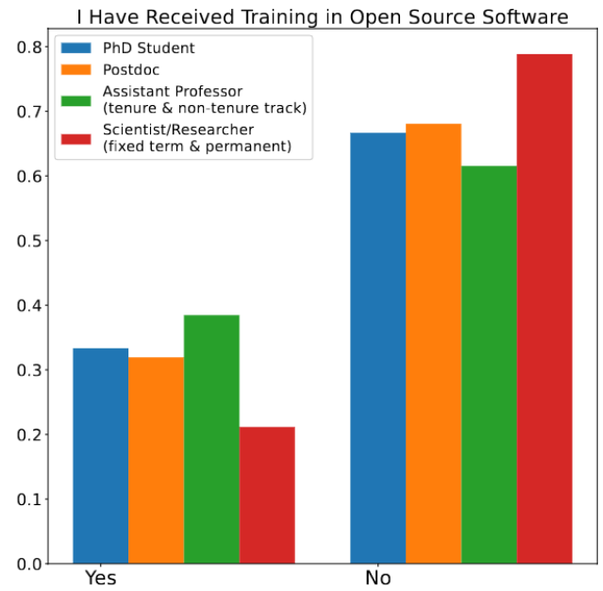
June 27th 2023

What triggered this group

ECFA Survey results

- Recent survey on training in Instrumentation
- Large majority of participants acknowledge importance of software for their work
- However report that haven't received any relevant training





arXiv:2107.05739v1

- Support for Open Source Software (OSS) tools: 71% of 334 respondents indicated that their instrumentation work involved using open source software tools, whilst 70% of 330 respondents said they had not received training for such tools. The use of OSS in PCB design, FPGA development, and ASIC design was highlighted by one respondent as a way to increase participation of marginalised groups who are members of institutions without the funding necessary to acquire expensive licenses.

Or some personal experience..

How we could help

- By participating in this group for example
- Possible deliverables:
  - A comprehensive review of existing software/machine learning techniques and their applications in the field of instrumentation/detector physics
  - Review of existing **Open Source Software (OSS)** for different applications, examples:
    - **PCB** design
    - **FPGA** development
    - **ASIC** design
    - **Detector Control System (DCS)** and **Data acquisition (DAQ)**
    - Any software that could simplify and accelerate instrumentation work
  - Survey on the need of software/machine learning skills as part of instrumentation work (how such skills can improve efficiency, independence of researcher etc)
  - **Long term goal:** organise/initialise efforts for schools/workshops dedicated in software training/development for instrumentation work
    - Could include trainings in OSS
    - Creating your own DCS/DAQ systems

Status / Future Plans

- First successful meeting held end of April : *https://indico.cern.ch/event/1280862/*
- WG specific mailing list created (if interested to participate please subscribe!) : ecfa-ecr-sw-ml-instrumentation@cern.ch
- Dedicated mattermost channel: click to join
- Google doc to collect information / post ideas : link

Goals for next months:

- Finalize review of OSS
- Prepare/distribute survey
- Data analysis of survey results

Thank you!