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Declarative paradigms for analysis description and implementation

The software toolbox used for “big data” analysis in the last few years is changing fast. The adoption of approaches able to exploit the new hardware architectures plays a pivotal role in boosting data processing speed, resources optimisation, analysis portability and analysis preservation.

The big scientific collaborations (ATLAS, CMS, LHCb, Alice, ...) are devoting increasing resources to the development and implementation of bleeding-edge software technologies, pushing the reach of the single experiments and the whole HEP community.

The introduction of declarative paradigms in the analysis description and implementation is growing interest and support in the main collaborations. This approach can simplify and speed-up the analysis description phase, support the portability of an analysis among different datasets/experiments and strengthen the preservation of the results.

Furthermore this approach, providing a stronger decoupling between the analysis algorithm and back-end implementation, is a key element for present and future processing speed.

In the frame of the “Quasi interactive analysis of big data with high throughput” use case of the ICSC-S2-WP2 activity is ongoing for the development of a framework characterized by a declarative paradigm for the analysis description and able to operate on datasets from different experiments.

Starting from the existing NAIL (Natural Analysis Implementation Language - <https://indico.cern.ch/event/769263/contributions/3413006/>) Python package, developed in the context of the CMS data analysis and devoted to the event processing, the activity is focusing on the development of general and effective interface able to support the data format of different experiments and on the extension of the declarative approach to the full analysis chain.

Giorno preferito

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