Poster Awards

Monday Winner: Aleksandra Poreba

Performance of the ATLAS GNN4ITk Particle Track Reconstruction GPU pipeline

MON 25
21 Oct 2024, 15:18
57m
Exhibition Hall

Poster | Track 2 - Online and ... | Poster session

Speaker

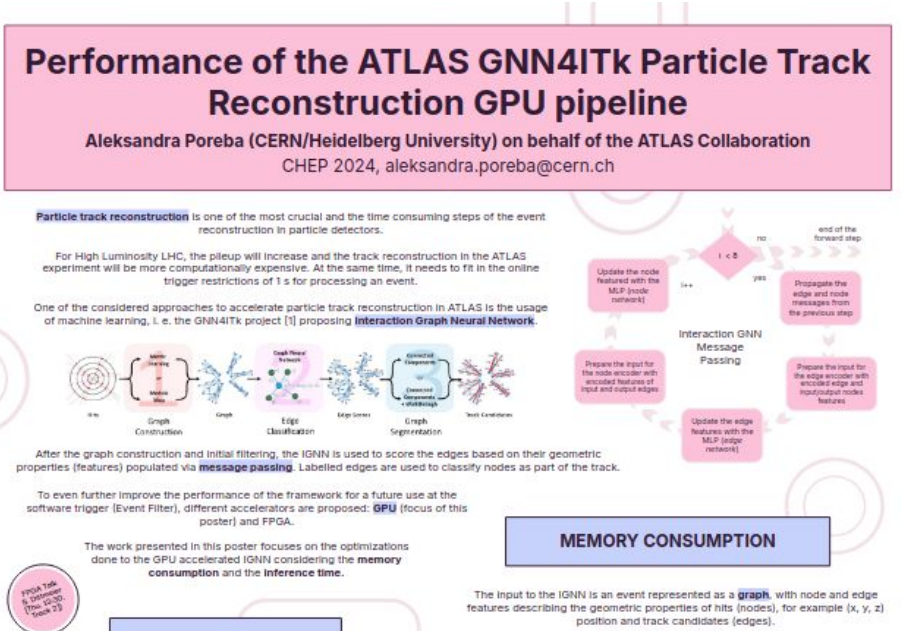
Aleksandra Poreba (CERN / Ruprecht Karls Universitaet Heidelberg (DE))

Description

With the upcoming upgrade of High Luminosity LHC, the need for computation power will increase in the ATLAS trigger system by more than an order of magnitude. Therefore, new particle track reconstruction techniques are explored by the ATLAS collaboration, including the usage of Graph Neural Networks (GNN). The project focusing on that research, GNN4ITk, considers several heterogeneous computing options, including the usage of Graphics Processing Units (GPU). The framework can reconstruct tracks with high efficiency, however, the computing requirements of the pipeline are high. We will report on the efforts to reduce the memory consumption and inference time enough to enable the usage of commercially available and affordable GPUs for the future ATLAS trigger system while maintaining high tracking performance.

Primary authors

ATLAS TDAQ
Aleksandra Poreba (CERN / Ruprecht Karls Universitaet Heidelberg (DE))



https://indico.cern.ch/event/1338689/contributions/6015428/

Tuesday Winner: Alexey Rybalchenko

Leveraging Language Models for Enhanced Code Review in Particle Physics Software Development

TUE 01
22 Oct 2024, 15:18
57m
Exhibition Hall

Poster | Track 6 - Collaborati... | Poster session

Speaker

Alexey Rybalchenko (GSI - Helmholtzzentrum fur Schwerionenforschung GmbH (DE))

Description

Collaborative software development for particle physics experiments demands rigorous code review processes to ensure maintainability, reliability, and efficiency. This work explores the integration of Large Language Models (LLMs) into the code review process, with a focus on utilizing both commercial and open models. We present a comprehensive code review workflow that incorporates LLMs, integrating various enhancements such as multi-agent capabilities and reflection. Furthermore, tools are employed to facilitate the verification of suggested code changes before presentation in the review. By harnessing the capabilities of LLMs, the review process can uncover faults and identify improvements that traditional automated analysis tools may overlook. This integration shows promise for improving code quality, reducing errors, and fostering collaboration among developers in the field of particle physics software development.

Primary authors

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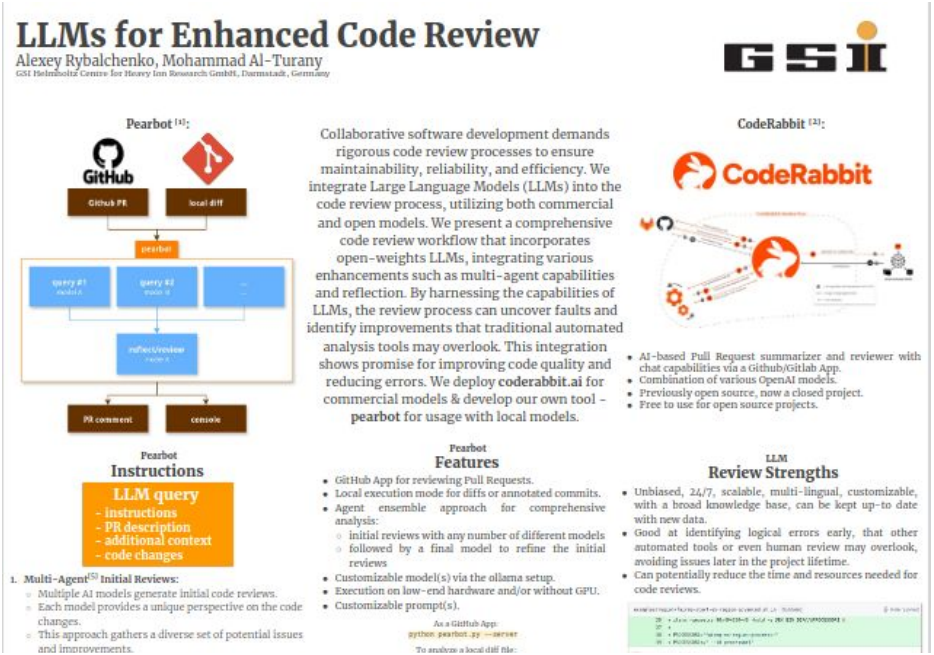

https://indico.cern.ch/event/1338689/contributions/6010676/

Wednesday Winner: Marco Donadoni

User sharing of computational workflows in the REANA reproducible analysis platform

WED 40
23 Oct 2024, 15:18
57m
Exhibition Hall

Poster | Track 5 - Simulation ... | Poster session

Speaker

Marco Donadoni (CERN)

Description

We present the new user-sharing feature of the REANA reproducible analysis platform. The researchers are allowed to share their selected workflow runs, job logs, and output files with colleagues. The analyst retains the full read-write access to the workflow and may opt for granting individual read-only access to colleagues for a possibly-limited period of time. The workflow sharing feature was developed to answer the needs of physics teams using REANA computational workflow platform and is available for all supported CWL, Serial, Snakemake, and Yadage workflow systems. The feature is available in the REANA command-line client and on the REANA web interface. The contribution describes the main use cases, presents the architecture and the implementation details, as well as comments on the challenges of supporting a variety of external Identity and Access Management systems holding user information for customising REANA deployments.

Primary authors

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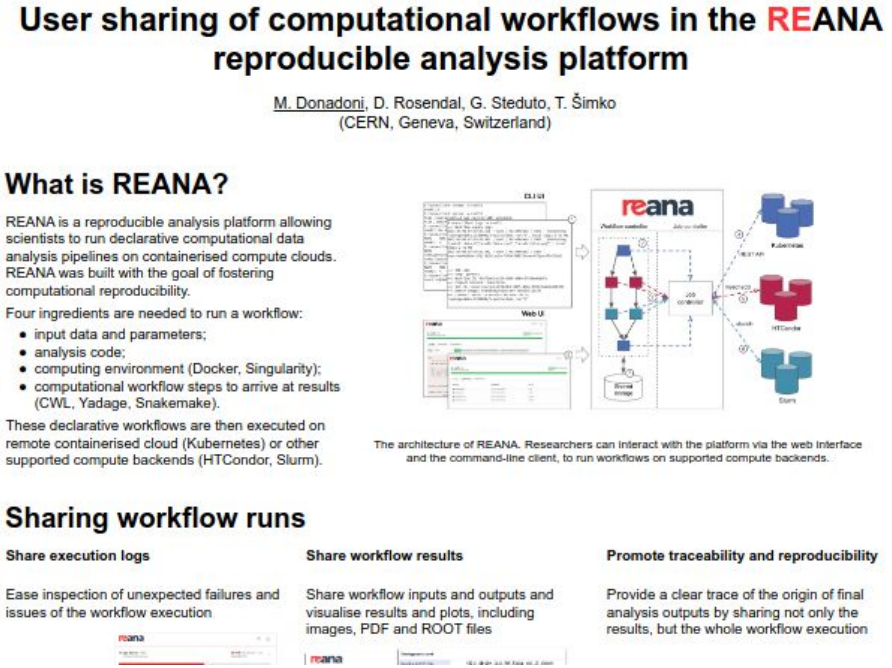

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Thursday Winner: Gordon Watts

Evolution of Regional, Age and Gender Demographics in the ATLAS Collaboration

THU 01
24 Oct 2024, 15:18
57m
Exhibition Hall

Poster | Track 8 - Collaborati... | Poster session

Speaker

Gordon Watts (University of Washington (US))

Description

The ATLAS Collaboration consists of around 6000 members from over 100 different countries. Regional, age and gender demographics of the collaboration are presented, including the time evolution over the lifetime of the experiment. In particular, the relative fraction of women is discussed, including their share of contributions, recognition and positions of responsibility, including showing how these depend on other demographic measures.

Primary authors

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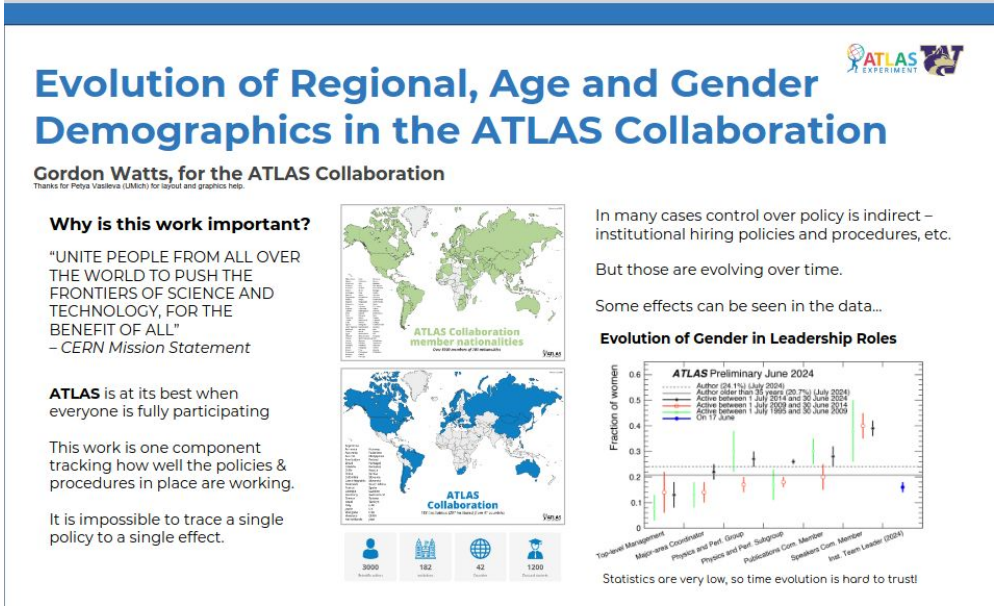
Maria Teresa Dova (National University of La Plata (AR))
Prof. Simon Connell (University of Johannesburg (ZA))
Steven Goldfarb (University of Melbourne (AU))



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