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Power of Python and Julia for Advanced Data Analysis

Monday 30 September 2024 11:00 (30 minutes)

Python and Julia are two powerful languages that are transforming data analysis in high-energy physics (HEP).

We'll start by exploring why Python remains a go-to language for data analysis, and then pivot to Julia, which is gaining recognition for its impressive speed and suitability for scientific applications.

I'll show you how to create a dynamic workflow that combines the strengths of both languages. We'll explore PythonCall for integrating Python's vast ecosystem into Julia projects and JuliaCall for embedding high-performance Julia code into Python scripts. You'll see how easy it is to blend these languages and why it's worth the effort.

Through hands-on examples, I'll demonstrate real-world applications where combining Python and Julia leads to faster, more efficient data processing. We'll tackle scenarios common in HEP, showing the practical benefits of this hybrid approach.

We'll also discuss the challenges you might face, like dependency management and ensuring compatibility between the two languages. I'll share strategies to overcome these hurdles and keep your projects running smoothly.

Looking ahead, we'll consider the exciting future possibilities of deeper Python-Julia integration and the role of the developer community in driving innovation. I hope to encourage you to experiment with this approach and contribute to the evolving ecosystem.

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