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From Reproducible Research to Open Science Dissemination: A Computing Platform-Centric Approach

Transparency and reproducibility requirements in computationally intensive scientific research demand novel solutions that integrate rigorous research practices with open science dissemination. This presentation presents a scientific computing platform designed for big data life science research that treats the open sharing of reproducible findings as a natural and efficient extension of the research process itself. By embedding a computational reproducibility framework directly within the platform, researchers can proactively capture a complete trace of their analysis, including data, methods, and executable tools, as their investigation unfolds. This approach empowers result verification and re-execution during the study. It also provides the essential components for transparent open science publication of the study findings through the release of the reproducible trace, granting access to all relevant data and the ability to re-run analysis steps within a compute environment mirroring the original infrastructure. Furthermore, this approach to research provenance offers a powerful mechanism for contextual data governance, moving beyond traditional IT-centric metrics to policies informed by the actual use and significance of specific data sets and tools. This enables organizations to create precise policies for data archival and tool discontinuation, which in turn reinforces the platform's long-term sustainability, ensuring its continued existence and impact on scientific discovery.

Tagline

Integrating reproducible research with open science dissemination via a scientific computing platform designed for long-term sustainability.

Keywords

proactive provenance, analysis reproducibility, contextual data governance

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