Good Data is the Lifeblood of Great AI: Software-enabled Interfaces between Scientists, Machines, and Databases

Background

The digital transformation of experimental labs is an indispensable steppingstone in the broader application of machine-learning-based methods which tackle longstanding scientific challenges. One of the potential routes for converting data into knowledge is through the application of the FAIR (findable, accessible, interoperable, reusable) data principles. Fully applying these principles, however, requires a gentle balance of utilizing solutions like ontologies and virtual research environments, and the components that ensure the robust communication between these technologies and human operators.

Objectives

The specific objective of this project is to engineer and further improve the front- and back-end infrastructure for effective communication between lab scientists, ontologies, and Kadi4Mat. Proof-of-concept work in that respect has already been performed and published (Garabedian et al., 2022, www.nature.com/articles/s41597-022-01429-9). Additionally, software solutions which facilitate the use and generation of FAIR data in practice have already been implemented at s prototypical level. Thus, this project will step on existing expertise, and the outcomes will be immediately applied in an experimental lab.

Requirements

Students who have experience in (or would like to learn) Python programming are encouraged to apply. An understanding of web development is a plus. The applicant will be part of an active and diverse team of data scientists, experimental scientists, and mechanical engineers. Interest in material science is an advantage, but not a requirement.

Possible start: as soon as possible

Contact

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