Internship Title

Internship - Tools for Nuclear Data Management and Analysis

Target Start of Internship

April 2024

Duration

12 months

Organizational Setting

Department: Nuclear Sciences and Applications (NA)

Division: Physical and Chemical Sciences (NAPC)

Section: Nuclear Data Section (NDS)

Unit: Atomic and Molecular Data Unit (AMD)

Main Purpose

The main purpose of the internship is to develop and implement modern, reusable software tools to maintain, expose and leverage the bibliographic and numerical data hosted by the Nuclear Data Section (NDS).

The NDS is a global focal point for the permanent storage, retrieval and dissemination of nuclear, atomic and molecular data in the physical sciences. It hosts more than 2.7 TB of data in a variety of databases and formats.

The intern will assist in the development of new, open-source data tools that will facilitate the convergence of our infrastructure towards “FAIR” principles: data should be findable, accessible, interoperable, and reusable. These tools will prove useful to other institutes and laboratories facing similar challenges and wishing to modernize their data workflows and

infrastructure.

The project also aims to adopt newer technologies and methods (data mining, full-text searching, machine learning) to enable automatic knowledge extraction from articles and reports, with the goal of enhancing the existing metadata and providing a better search quality for users.

Tasks / Key Results Expected

* Development of interfaces to manage and maintain (meta)data.
* Implementation of prototype Application Programming Interface (API) tools to facilitate data interoperability.
* Upgrade of existing bibliographic data services to improve management and maintenance and to facilitate the use of new technologies for data mining.
* Facilitate data persistence and provenance through the design and deployment of Universal Resource Identifier (URI) standards for the Section’s data and publications.
* Assist with the migration of data to newer database schemas.

Knowledge, Skills and Abilities

* Familiarity with a modern programming language such as Python.
* Knowledge of front-end development (HTML / CSS / JavaScript / React) and/or web frameworks such as Django is an *asset*.
* Experience with relational database development is an asset.
* Good communication and teamwork skills; capable of working independently and proactively.

Qualifications and Experience

* University degree in Computer science, Data Science, Physical Sciences, Mathematics, Engineering or a related discipline.
* Experience in a relevant programming language.

Potential Institutions/Organizations that can be reach out to in order to attract potential applicants

* Technical Universities.
* Research Institutes.

Internships

The IAEA accepts a limited number of interns each year. The internships are awarded to persons studying towards a university degree or who have recently received a degree (see Internship web pages for further details).

The purpose of the programme is:

* To provide interns with the opportunity to gain practical work experience in line with their studies or interests, and expose them to the work of the IAEA and the United National as a whole.
* To benefit the IAEA's programmes through the assistance of qualified students specialized in various professional fields.
* The duration of an internship is normally not less than three months and not more than one year.

Applicant Eligibility

* Candidates must be a minimum of 20 years of age and have completed at least three years of full-time studies at a university or equivalent institution towards the completion of a first degree.
* Candidates may apply up to one year after the completion of a bachelor's, master's or doctorate degree.
* Candidates must not have previously participated in the IAEA's internship programme.
* Excellent written and spoken English essential; fluency in any other IAEA official language (Arabic, Chinese, French, Russian) an asset.
* Candidates must attach two signed letters of recommendation to their application.