**Internship Title**

Internship – Use of Artificial Intelligence (AI) and Machine learning for energy system assessment tools

**Duration of Internship:**

12 months

**Target Start of Internship:**

2024

**Organizational Setting**

Department: Nuclear Energy

Division: Planning, Information and Knowledge Management

Section: Planning and Economic Studies (PESS)

**Main Purpose**

The main purpose of the internship is to explore field of AI and machine learning and its potential application for energy planning and energy system assessment, e.g. in areas like optimal uses of energy resources and system operation, load analysis and consumer behaviour/preferences, representation of stochastic events and uncertainty analysis, enhancing sustainability through grid optimisation and demand side management, mitigating environmental impacts and other related activities. Results of the research could be deployed and integrated into the suite of the IAEA’s energy planning tools.

**Tasks / Key Results Expected**

* Review of literature related to AI and machine learning and status of deployment of these techniques into energy planning tools.
* Identify the areas where AI could be effectively used withing the IAEA’s suite of tools and develop a concept of a simple tool for selected area of application (e.g. demand analysis, supply optimisation, stochastic modelling and uncertainty analysis) and demonstrate its benefits compared to conventional approaches.
* Document the example case study and prepare set of basic lectures on principles of the AI and its application into energy planning process.

**Knowledge, Skills and Abilities**

* Knowledge of energy system planning process, main challenges and approaches
* Basic knowledge of AI systems and machine learning
* Ability to conduct independent research
* Demonstrated interest in work, being efficient in meeting commitments, observing deadlines, and achieving results
* Capability to work in a team
* Desire to learn and expand knowledge in new subjects

**Qualifications and** **Experience**

* University degree in Energy/Electrical Engineering/Power Systems, Energy System Modelling and Simulation, Energy Economics, or a related field.
* Experience in energy system modelling, simulation, and analysis (energy demand and supply).

**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 recommended duration of this internship is 6 to 12 months.

**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, Spanish) an asset.
* Candidates must attach two signed letters of recommendation to their application.