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## An On-Site Inspection System Using Machine Learning

Verification of compliance with the Comprehensive Nuclear-Test-Ban Treaty (CTBT) requires highly accurate analysis methods. Based on the fission products analysis, it is proposed to increase inspections efficiency by using machine learning.

As part of research conducted by students from the National Research Nuclear University MEPhI, a system is currently being developed that automates process of data collection and analysis. The main goal is to use machine learning algorithms to analyze gamma-and mass-spectrometry data, allowing for the determination of the time and nature of a nuclear event based on fission-produced isotopes data.

The up-level approach involves integrating machine learning with international data center, enabling real-time analysis of radioactive isotopes and detection of potential violations. The system minimizes the human-factor aspect and accelerates decision-making processes.

The expected outcome is the development of a universal tool that will become an integral part of the global verification system for the CTBT. The study emphasizes the substantial contribution of students from MEPhI to advancement of technologies for global nuclear security and control.

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