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Heterogeneous IT platform “HybriLIT” for organizing the educational process on the basis of the International IT School “Data Science”

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The International School on Information Technologies “Data Science” was created at the State University “Dubna”. It ensures training of IT specialists for the development of computing of megaprojects (NICA, PIC, LHC, FAIR, SKA, etc.), Big Data analytics (Data Science), digital economy and other promising directions. Educational programs of the International IT School are formed taking into account personnel needs of the Joint Institute for Nuclear Research (JINR). The program includes such subjects as “Mathematical apparatus and tools for data analysis”, “Technologies and platforms for distributed and parallel computing”, “Big Data analytics”.

Training in these disciplines is held using the “HybriLIT” heterogeneous platform, which is part of the Multifunctional Information and Computing Complex (MICC) of the Laboratory of Information Technologies (LIT) JINR. The heterogeneous platform consists of the “HybriLIT” education and testing polygon and the “Govorun” supercomputer, which are combined with the unified software and information environment.

Training courses on parallel programming technologies and hybrid technologies are held on the basis of the “HybriLIT” polygon. An ecosystem for tasks of machine learning and deep learning (ML/DL) and data analysis was created on the “HybriLIT” platform to study ML/DL methods, develop mathematical models and algorithms and carry out resource-intensive calculations including on graphics accelerators, which can significantly reduce the calculation time.

The software and information environment was elaborated and is actively developed for the most efficient use of cluster resources. It includes the website, the service Indico, the service GitLab and others, which are used in the educational process to increase the efficiency of interaction with students.

Using the “HybriLIT” education and testing polygon allows students to master novel IT solutions and technologies that will be included in the curricula of higher educational institutions only in the future.

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