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PRESS RELEASE

Collective exposition of the Ministry of Education of the Republic of Belarus at the III Forum of IT- Akademgrad "Artificial Intelligence in Belarus"

As part of the III Forum of IT-Akademgrad "Artificial Intelligence in Belarus", which will be held on October 10-11, 2024 in the building of the Presidium of the National Academy of Sciences of Belarus, an exposition of scientific and technical developments of universities has been organized – four Minsk universities (BSUIR, BSU, BNTU, BSTU) and four regional universities (BrSTU, Sukhoi State Technical University of Gomel (GSTU), Yanka Kupala State University of Grodno, Euphrosyne Polotskaya State University of Polotsk (PSU) will present a total of 23 developments created using machine vision, deep learning and other artificial intelligence technologies.

In particular, the following applications will be demonstrated **for the medical industry**:

1. Software for automatic calculation of orbit parameters (developer – BSUIR).
It is designed to automate the process of diagnostics and preparation for surgery to replace damaged orbital bones. The program implements a unique method for automated calculation of orbital dystopia levels, including hypophthalmos, exophthalmos and enophthalmos, using artificial convolutional neural networks.

2. Intelligent software for identifying pathologies of parathyroid gland tissue (developer – Sukhoi State Technical University of Gomel).
This development made it possible to improve the results of topical diagnostics of parathyroid gland diseases using the method of confocal laser microscopy and machine learning methods from 69% to 86%.

3. Microcontroller system for measuring respiration for patients (developer – BrSTU).
The system measures the patient's inhalation and exhalation pressure (the maximum pressure value is recorded). The data is displayed on the screen and also saved in the mobile application in the patient's reference database. It is possible to connect the system via USB to a PC or mobile device.

4. NeuroScan: intelligent analysis of MRI images for rapid diagnosis of stroke (developer – Yanka Kupala State University of Grodno).
This development is relevant for neurologists and radiologists who perform stroke diagnostics based on the analysis of digital MRI images. The development is based on the use of neural networks trained on MRI images of the brain, and allows for automatic detection of stroke signs, increasing the speed and accuracy of diagnostics.

Among the developments **of BSU,** of particular interest are **a multi-object system for deploying a group of atmospheric probes**, which is developed for experimental testing of a wide range of tasks of group flight of spacecraft. The relevance lies in the prospects and multi-vector

nature of the creation of a satellite communication system based on a group of atmospheric probes as an innovative direction **in the aerospace field**.

BNTU will present developments in the field of robotics, including an object recognition algorithm used to control technological operations. The algorithm tracks the accuracy of the manipulator's working element movement based on video stream processing using the YOLO convolutional neural network. The Python software automatically determines the probability of the checkpoint position in a given position at a specific point in time.

BSTU presents a complex of intelligent management of wastewater treatment facilities, which includes a system for predicting wastewater quality indicators before treatment and an intelligent information and analytical system that performs digital modeling, design support and decision-making in managing technological processes of biological treatment facilities.

PSU will present a system for recognizing free parking spaces in a corporate parking lot. This is a comprehensive solution for managing parking spaces in a corporate parking lot, allowing to account and control the owners of parking spaces and the license plates of their cars.

Venue: Minsk, building of the Presidium of the National Academy of Sciences of Belarus, Nezavisimosti Ave., 66.

Exhibition opening hours: October 10, 2024 from 09:00 to 18:00, October 11, 2024 from 09:00 to 18:00.