

AI as a driver of industry: experts discussed challenges and solutions at a conference in SPbPU

Peter the Great St. Petersburg Polytechnic University (SPbPU) is hosting a large-scale All-Russian Scientific and Practical Conference with international participation «Industrial Artificial Intelligence», organized under the auspices of the St. Petersburg Branch of the Russian Academy of Sciences and jointly with St. Petersburg State University.



Over 150 participants from more than 25 universities and scientific organizations, about 20 enterprises and companies-developers of the real sector of economy registered at the conference. Many regions of the Russian Federation are represented: St. Petersburg, Moscow, Tyumen, Novosibirsk, Orenburg, Tomsk, Kazan, Murmansk, Novgorod, Samara and others, as well as Belarus and the People's Republic of China, which is represented by graduate students.



Co-chair of the conference program committee and moderator of the plenary session, Corresponding Member of the RAS, Vice-Rector for International Affairs of SPbPU Dmitry Arseniev, opening the event, emphasized: Today we have tried to bring together the academic and university community, as well as leading Russian industrial companies to discuss the most pressing issues of development and implementation of solutions in the field of industrial artificial intelligence.



Vitaly Sergeev, First Vice-Rector of SPbPU, Corresponding Member of the Russian Academy of Sciences, welcomed the conference participants: The synergy of industry, science and education will lead to the creation of breakthrough products where AI will become the basis for designing, optimizing and working with big data beyond the control of the human brain.



The program of the first day started with a series of keynote plenary speeches, dedicated to discussing the current state of the art, key challenges, topical issues of development and implementation of promising breakthrough solutions in the field of industrial artificial intelligence, intelligent control systems, automation and robotization technologies.

The moderator of the session, Dmitry Arseniev, together with Vyacheslav Shkodyrev, Professor of the Higher Cyber-Physical Systems and Control at SPbPU, opened the scientific discussion with the report «Strong Industrial Artificial Intelligence: Principles of Cognitive Science and Knowledge Structuring in Control Systems», setting the tone for the entire forum.



The plenary sessions of the conference were devoted to the discussion of the current state of the art, key challenges, topical issues of development and implementation of promising breakthrough solutions in the field of industrial artificial intelligence, intelligent control systems, automation and robotization technologies. Experts from SPbPU, the V.A. Trapeznikov Institute of Control Sciences of the RAS, Gazprom Neft, Nornickel and Rakurs-Engineering presented reports on strong industrial AI, engineering artificial intelligence, intelligent robotics systems, import substitution in automated control systems and experience of AI implementation at metallurgical enterprises.



At the section «Software and hardware platforms and artificial intelligence technologies in automation and control systems» they discussed physics-based machine learning models and neurosymbolic artificial intelligence as a basis for digital twins of pipeline energy systems, intelligent process chain control system, technologies of automation and intellectualization of proactive control of complex objects and other equally important issues.

Students and postgraduate students of SPbPU, SPbSU, MIPT, ITMO, UTMN, BRU and Russian other universities in the center «Polytech — Cyberphysics» presented at the Youth Section the results of their research and development in the field of AI.



The plenary session on the second day of the conference was opened by the moderator of the second day, co-chair of the program committee, Professor Nikolay Kuznetsov, Head of the Department of Applied Cybernetics of St. Petersburg State University, Corresponding Member of the RAS, Doctor of Physical and Mathematical Sciences, who in his report noted the innovative approach of St. Petersburg State University to personnel training, told about the first in Russia specialty in the field of mathematics of artificial intelligence, emphasizing the need for close connection between fundamental science and industry demands.



Sectional sessions of the second day were devoted to the discussion of distributed and hybrid group intelligence, predictive analytics and intelligent systems, industrial safety. Valery Odegov, Director General of OAO Atomik Soft, emphasized on technological sovereignty in industrial automation, presenting domestic solutions for ACS and their role in ensuring the independence of critical industries.



The conference concluded with a discussion of its outcomes. Participants and organizers highlighted the high scientific and practical caliber of the presented reports, as well as the relevance of the topics covered — ranging from fundamental research to specific industrial implementation solutions. Special emphasis was placed on the platform's importance for fostering dialogue between academia, education, and business in such a strategically significant field as industrial artificial intelligence.

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