University	Peter the Great St.Petersburg Polytechnic University
Level of English proficiency	Advanced (C1)
Educational program and field of the educational program for which the applicant will be accepted	ENGINEERING & TECHNOLOGY 2.5.4. Robots, mechatronics, and robotic systems COMPUTER & DATA SCIENCE 2.3.4. Management in organizational systems 2.5.1. Engineering geometry and computer graphics. Digital product lifecycle management.
List of research projects of the potential supervisor (participation/leadership)	• Intelligent control algorithms in power industry • Adaptive intelligent manufacturing control systems • Aspects of smart manufacturing via agent-based approach
List of the topics offered for the prospective scientific research	• Development of Adaptive Deep-Learning Controller for PID Process • Power demand smart control of isolated electrical grid that uses fossil and renewable energy sources • Developing of Digital Twins Architecture
 Research supervisor: Vyacheslav Potekhin, PhD, Associate Professor (Baltic State Technical University)	1.02. Computer and information sciences
	Supervisor's research interests • The development of cyberphysical systems, implying a tight interaction between humans and robots, is certainly modern trend. • Cyberphysical systems affect production processes to the extent that they are compared with the Indusry 4.0. • Basic research develops innovative technologies, software and hardware solutions for industrial automation and high-tech control systems.
	Research highlights • PhD Students analyse the interactive environment of cyberphysical and robotic systems and create new solutions and mathematical models of robotics and control systems; they study technologies of remote control of industrial facilities, group control of team behavior of robots and situational control in conditions of uncertainty in the framework of applied developments. • The laboratories of Intelligent Robotics and Cyberphysical Systems, Intelligent Control Systems and Intelligent Industrial Automation Systems were created on the basis of the Educational and Scientific Center "SPbPU-Festo Synergy," Peter the Great St. Petersburg Polytechnic University. Laboratories were formed with the support of leading manufacturers of industrial automation systems and devices from companies such as Siemens, FESTO, Schneider Electric, EURODRIVE and others
	Supervisor's specific requirements: • Industrial electronics • Mechatronic systems • Robotic systems • Industrial Internet of Things
	Supervisor's main publications • РАЗРАБОТКА И СОЗДАНИЕ СИСТЕМЫ

	УПРАВЛЕНИЯ ГЛУБОКОВОДНЫМ ГИДРАВЛИЧЕСКИМ МАНИПУЛЯТОРОМ МГМ-7 С ПРОТОТИПИРОВАНИЕМ НА ОСНОВЕ ПОЛУНАТУРНОЙ МОДЕЛИ С ЭЛЕКТРИЧЕСКИМ ПРИВОДОМ. ЧАСТЬ 1, Потехин В.В., Смирнов П.К., Федоров П.Г., Черкашин Е.А., Морской вестник. 2023. № 1 (85). С. 95-96. • IMPLEMENTATION OF MACHINE LEARNING ALGORITHMS FOR PARKINSONIAN GAIT DATA, Unal O., Potekhin V.V., Computing, Telecommunications and Control. 2023. Т. 16. № 1. С. 69-78. • РАСЧЕТ ГЛУБОКОВОДНОГО ГИДРАВЛИЧЕСКОГО МАНИПУЛЯТОРА МГМ-7 ЧАСТЬ 2. ПРОЧНОСТНОЙ РАСЧЕТ И ТОПОЛОГИЧЕСКАЯ ОПТИМИЗАЦИЯ, Кожевников В.С., Потехин В.В., Смирнов П.К., Морской вестник. 2022. № 2 (82). С. 45-49. • Potekhin V.V., Alekseev A.P., Kuklin E.V., Khitrova Ya.D., Kozhubaev Yu.N. (2023) Cloud Distributed Control System Based On Open Process Automation Platform, Computing, Telecommunications And Control, Vol. 16, No 2, pp 17-28, **DOI**: 10.18721/JCSTCS.16202 • Potekhin V.V., Selivanova E.N., Katalinič B. (2021) Development Of A Digital Transformation Model For Industrial Cyber-Physical Systems, 16th International Conference On Industrial Manufacturing And Metallurgy, ICIMM 2021, Nizhny Tagil, 17–19 June 2021, **DOI**: 10.1063/5.0075038 • Potekhin, V.V., Bahrami, A.H., Katalinič, B. (2020) Developing manufacturing execution system with predictive analysis,15th International Conference on Industrial Manufacturing and Metallurgy, ICIMM 2020; Nizhny Tagil; Russian Federation; 18-19 June 2020, **DOI**: 10.1088/1757-899X/966/1/012117 • Katalinić, B., Kostenko, D., Onufriev, V.A., Potekhin, V.V. (2020) Cyber-Physical Systems in Complex Technologies and Process Control, Lecture Notes in Networks and Systems, Volume 95, pp 40-54 DOI: 10.1007/978-3-030-34983-7_5 • Kapralov, N.V., Ekimovskii, J.V., Potekhin, V.V. (2020). EEG-Based Brain-Computer Interface for Control of Assistive Devices. Lecture Notes in Networks and Systems 95, с. 536-543 **DOI:** 10.1007/978-3-030-34983-7_52 • Alekseev, A.P., Efremov, V.V., Potekhin, V.V., Zhao, Y., Du, H. (2020). Digital Twin Analytic Predictive Applications in Cyber-Physical Systems. Lecture Notes in Networks and Systems 95, с. 368-377 **DOI:** 10.1007/978-3-030-34983-7_35

	• Nepomnyashchiy, O.V., Krasnobaev, Y.V., Yablonsky, A.P., Potekhin, V.V., Sirotinina, N.J. (2019). Ensuring minimum duration of transient processes in switched voltage regulators with digital control. EAI Endorsed Transactions on Energy Web 6(24), e6 **DOI:** 10.4108/eai.16-10-2019.160838 • Katalinic, B., Eliseev, A., Breido, I., (...), Stazhkov, S., Filaretov, V. (2019). Experience of application of network technologies in engineering education. EAI Endorsed Transactions on Energy Web 5(16), 5 **DOI:** 10.4108/eai.30-1-2018.153817 • Potekhin, V.V., Pantyukhov, D.N., Mikheev, D.V. (2017). Intelligent control algorithms in power industry. EAI Endorsed Transactions on Energy Web 17(11), e5 **DOI:** 10.4108/eai.11-7-2017.152766
	Results of intellectual activity • Automated Intelligent:Energy Monitoring and Optimization System. Know-how • Integrated Hybrid Decentralized Management System for Autonomous Wind Farm, Know-how