




С И Б И Р С К И Й
Ф Е Д Е Р А Л Ь Н Ы Й
У Н И В Е Р С И Т Е Т

S I B E R I A N
F E D E R A L
U N I V E R S I T Y

Portfolio of scientific supervisors of the participants of the postgraduate track of the International Olympiad of the Global Universities Association

University	Siberian Federal University
Level of English proficiency	C1
Educational program and field of the educational program for which the applicant will be accepted	<p>2.2 Electronics, photonics, instrumentation and communications (direction of training)</p> <p>2.2.8 Methods and instruments for monitoring and researching materials, products, natural substances and the natural environment (profile educational program)</p> <p>2.3 Information technology and telecommunications (direction “Information training”)</p> <p>2.3.1 System analysis, management and information processing, statistics (profile educational program)</p>
List of research projects of the potential supervisor (participation/leadership)	<p>In 2017, as part of the team, he took part in the implementation of a RFBR grant. Agreement No. 17-01-20474\17 dated June 14, 2017 with the Russian Foundation for Basic Research on the scientific project: “Project for organizing and conducting the IV international seminar Applied methods of statistical analysis. Nonparametric methods in cybernetics and systems analysis.”</p> <p>From 2017 to 2019, he became a member of the team for the implementation of the State assignment of the Ministry of Education and Science of Russia No. 2.1676.2017/4.6. “Development and research of self-configuring hyperheuristic solutions to complex problems of non-stationary multimodal optimization using bionic algorithms.”</p> <p>Since 2021, member of the scientific team for project No. 10-2/R&D of RN-KrasnoyarskNIPIneft LLC “Development of a neural algorithm for predicting lithology and reservoirs based on geophysical survey data of wells.”</p> <p>In 2023, he was a member of the research team conducting research on “Autonomous system for thermal stabilization of permafrost rocks” for Gazpromneft-Zapolyarye LLC. Development of computer models of heat transfer.</p>
List of the topics offered for the prospective scientific research	<ul style="list-style-type: none"> • Creation of methods and algorithms for monitoring and control of technical systems and complexes • Development of approaches and methods for monitoring the processes of production, storage, distribution of oil and petroleum products • Intelligent identification and management methods • Synthesis of guaranteed-stable adaptive control algorithms

	<ul style="list-style-type: none"> • Development of intelligent algorithms for interpreting geophysical data • Mathematical and computer modeling of oil and gas production facilities • Creation of new classification algorithms based on the ensemble approach
 <p>Research supervisor: Evgeny D. Agafonov, Doctor of Science</p>	Computer and data science
	<p>Supervisor’s research interests:</p> <ul style="list-style-type: none"> • Development of methods and algorithms for monitoring, control and management in technical systems • Development of algorithms for identification and control of complex objects, including distributed, nonlinear and non-stationary ones. • Application of machine learning, adaptive and intelligent models. • Study of decision-making procedures under conditions of uncertainty and risks.
	<p>Research highlights:</p> <p>Work in a scientific team known for its achievements and outstanding scientific results. Availability of dissertation councils in the specified specialties in Krasnoyarsk.</p>
	<p>Supervisor’s specific requirements:</p> <ul style="list-style-type: none"> • knowledge of machine learning terms and methodology; • Python/MATLAB proficiency; • experience in writing articles and presentations at conferences.
<p>Supervisor’s main publications:</p> <ol style="list-style-type: none"> 1. Fixed-budget approximation of the inverse kernel matrix for identification of nonlinear dynamic processes / N. Antropov, E. Agafonov, V. Tynchenko [et al.] // Journal of Applied Engineering Science. – 2022. – Vol. 20. – No 1. – P. 150-159. – DOI 10.5937/jaes0-31772 (Scopus). 2. Antropov, N. R. On the embedding parameters in kernel identification problem of nonlinear dynamical systems / N. R. Antropov, E. D. Agafonov // IOP Conference Series: Materials Science and Engineering, Krasnoyarsk / Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations. – Krasnoyarsk: Institute of Physics and IOP Publishing Limited, 2020. – P. 12143. – DOI 10.1088/1757-899X/734/1/012143 (Scopus). 	

3. Antropov, N. Adaptive Kernel identification of nonlinear stochastic dynamical systems / N. Antropov, E. Agafonov // Applied Methods of Statistical Analysis. Statistical Computation and Simulation - AMSA'2019: Proceedings of the International Workshop, Novosibirsk / Editors: Boris Lemeshko, Mikhail Nikulin, Narayanaswamy Balakrishnan. – Novosibirsk: NSTU, 2019. – P. 445-452 (Scopus).
4. Algorithm for non-parametric modeling of the cutting process of dense snow formations with snow plow blade / A. V. Lysyannikov, E. D. Agafonov, A. V. Egorov [et al.] // Journal of Physics: Conference Series : International Scientific Conference "Conference on Applied Physics, Information Technologies and Engineering - APITECH-2019" / Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations; Polytechnical Institute of Siberian Federal University. – Krasnoyarsk: Institute of Physics and IOP Publishing Limited, 2019. – P. 44051. – DOI 10.1088/1742-6596/1399/4/044051 (Scopus).
5. Predictive model of the trunk oil pipeline technological section on the basis of results of transient conditions test / E. D. Agafonov, A. G. Mironov, G. V. Vashchenko, A. I. Kuklina // IOP Conference Series: Materials Science and Engineering : International Workshop "Advanced Technologies in Material Science, Mechanical and Automation Engineering – MIP: Engineering – 2019", Krasnoyarsk / Krasnoyarsk Science and Technology City Hall of the Russian Union of Scientific and Engineering Associations. – Krasnoyarsk: Institute of Physics and IOP Publishing Limited, 2019. – P. 62092. – DOI 10.1088/1757-899X/537/6/062092 (Scopus).

Results of intellectual activity:

Certificate of state registration of the computer program No 2022619066 “Autonomous module for predicting lithology and reservoirs according to well logging data based on convolutional neural networks”.

Certificate of state registration of the computer program No 2020611040 “Software system for studying the efficiency of solving complex problems of non-stationary multimodal optimization”.

Certificate of state registration of the computer program No 2022619066 “Software system for solving complex problems of non-stationary multimodal optimization based on evolutionary self-configured hyperheuristics”.