# THE QUESTIONNAIRE OF THE APPLICANT OF SCIENTIFIC DEGREE OF THE CANDIDATE OF SCIENCES, OF SCIENTIFIC DEGREE OF THE DOCTOR OF SCIENCES (taking into account the letter of "Mineduscience of Russia" from the 02.11.2018 y. № MN-969 / GT "About the independent awarding of scientific degrees", submitted in the electronic and printed format)

1. The details about the applicant

1. The	details about the applicant	
1.1.	Last name /	Vetrov
	last name of foreign citizen	
	(according to the data of passport / visa	
	in the Russian-language transcription)	
1.2.	First name / first name of foreign citizen	Anatoly
	(according to the data of passport / visa	
	in the Russian-language transcription)	
1.3.	Patronymic / patronymic	Nikolaevich
1.5.	of foreign citizen (in the presence)	IVIKOIGEVICH
	(according to the data of passport / visa	
	in the Russian-language transcription)	
1.4.	Gender	male
1.5.	The date of birth	
		the 26th of July 1980 y.
1.6.	The citizenship	the citizen of USSR, RSFSR and RF
1.7.	The place of work of the applicant	the name of organization –
		"The Saint-Petersburg state
		electrotechnical university "LETI""
		("SPbSETU "LETI""),
		the departmental accessory –
		"The ministry of education and science of RF"
		("Mineduscience of Russia"),
		the type of organization –
		"The Federal state
		autonomous educational establishment
		of higher education" ("FSAEEHE"),
		the name of structural subdivision –
		the chair "Automatics and control processes" ("ACP")
		of the faculty "Computer technologies
		and informatics" ("CTI") of "SPBSETU "LETI"",
		the post – the teacher of the discipline
		"Intellectual technologies
		and representation of knowledge"
		(independently conducted the practical lessons
		in two groups of day department
		from the $01^{st}$ of September 2003 y. to the $31^{st}$ of August 2006 y.),
		the teacher of the discipline "Informatics"
		(independently developed the method. provision,
		gave lectures in six groups of day department
		and two groups of evening department
		and conducted the laboratory practical works
		in three groups of day department
		and two groups of evening department
		from the 01st of September 2004 y. to the 31st of August 2010 y.),
		the country – RF,
		the address of organization – RF, 197376,
1.0	The	Saint-Petersburg city, st. Prof. Popov, h. 5.
1.8.	The passport data	the series – 4004, the number – 458503,
		by whom and when issued – the 22 <sup>nd</sup> department of militia
		of Krasnogvardeisky district of Saint-Petersburg city
1.0		on the 14 <sup>th</sup> of August 2003 y.
1.9.	The visa	No
1.10.	The address of registration	RF, Saint-Petersburg city,
	for the citizens of RF	pr. Energetikov, h. 36, fl. 82.
1.11.	The address for correspondence	RF, 195248, Saint-Petersburg city,
	(for all)	pr. Energetikov, h. 36, fl. 82.
1.12.	The electronic address	WWW: www.vetrovan.spb.ru,
		Email: vetrovan@list.ru, vetrovan@nwgsm.ru
1.13.	The number of contact phone	+7(812)222-5291 (home),
	r	+7(812/921)950-2706 (cellular).

#### 2. The qualification data

2.1. The educational establishment of the place of training in the post-graduate study / doctoral study / attachment study, the period of training

2.1.1. <u>The country</u> – RF, the name of organization -"TIP № 1 of Krasnogvardeisky district of SPb. city", the departmental accessory -"The committee on education of Saint-Petersburg city" ("The ministry of national education of RSFSR"), the type of organization -"The state budgetary general-educational establishment" ("SBGE"), the name of structural subdivision -"Cybernetics" ("Informatics"), the address of organization – RF, 195112, Saint-Petersburg city, st. Tallinskaya, h. 21, the date of start and end of training / attachment from the 01st of September 1995 y. to the 12th of May 1997 y., the qualification "Programmer-laboratory assistant" on the specialty "Discrete mathematics and mathematical cybernetics": the theory of information, programming, vector computer graphics and genetic algorithms [the certificate (diploma) with honors of the sample of RSFSR the series "p.o.p.", order "405", circulation "5000", the 19th of June 1989 v., the average (secondary) professional education, physical-mathematical sciences]. 2.1.2. The country -RF, the name of organization – "SPbSETU "LETI"", the departmental accessory – "Mineduscience of Russia", the type of organization – "FSAEEHE", the name of structural subdivision the chair "ACP" of the faculty "CTI" of "SPbSETU "LETI"", the address of organization – RF, 197376, Saint-Petersburg city, st. Prof. Popov, h. 5, the date of start and end of training / attachment from the  $01^{st}$  of September 1997 y. to the  $11^{thof}$  February 2003 y., the qualification "Engineer" on the specialty "Control and informatics in the technical systems" [the diploma with honors of the sample of RF – the series DVS № 1230632, the higher professional education, technical sciences].

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2.1.3. The country -RF,
the name of organization –
"SPbSETU "LETI"",
the departmental accessory -
"Mineduscience of Russia",
the type of organization - "FSAEEHE",
the name of structural subdivision -
the chair "Submarines" ("SM")
of the faculty "Military training" ("MT")
of "SPbSETU "LETI"",
the address of organization – RF, 197376,
Saint-Petersburg city, st. Prof. Popov, h. 5,
the date of start and end
of training / attachment -
from the 01^{st} of September 1997 y. to the 11^{th} of February 2003 v.,
the qualification "Engineer" (lieutenant of "NAVY of RF")
on the specialty «Operation and repair
of ship fighting information
control systems"
(the automated control systems
of submarines) ("MU-3")
[the diploma with honors of the sample of RF –
confidentially,
the higher professional education,
military sciences].
2.1.4. The country -RF,
the name of organization -
"The international banking institute"
("IBI"),
the departmental accessory -
"Mineduscience of Russia",
the type of organization -
"The autonomous noncommercial organization
of higher education" ("ANOHE"),
the name of structural subdivision -
the chair "Banking" ("B")
of the faculty "Professional retraining
and improvement of professional skill" ("PR and IPS")
of "IBI",
the address of organization – RF, 191011,
Saint-Petersburg city, Nevsky pr., h. 60,
the date of start and end
of training / attachment -
from the 01^{st} of September 2003 y. to the 24^{th} of June 2004 y.,
the qualification "Expert-economist"
on the specialty "Finance and credit"
in the sphere "Banking"
[the diploma with honors of the sample of RF –
the series PP \cancel{N}_{2} 548008,
the higher professional education,
economic sciences].
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2.1.5. The country -RF, the name of organization -"SPbSETU "LETI"", the departmental accessory -"Mineduscience of Russia" the type of organization - "FSAEEHE", the name of structural subdivision the chair "ACP" of the faculty "CTI" of "SPbSETU "LETI"", the address of organization - RF, 197376, Saint-Petersburg city, st. Prof. Popov, h. 5, the date of start and end of training / attachment from the  $01^{st}$  of May 2003 y. to the  $31^{st}$  of May 2007 y., the qualification "Post graduate student" on the specialty 05.13.01 – "The system analysis, control and information processing" [the certificate about the passing of candidate examinations with honors of the sample of RF from the  $06^{th}$  of December 2006 y. No 128, the additional higher professional education, technical sciences]. 2.1.6. The country – RF, the name of organization -"The Saint-Petersburg state university" ("SPbSU"), the departmental accessory -"Mineduscience of Russia", the type of organization – "The Federal state budgetary educational establishment of higher education" ("FSBEEHE"), the name of structural subdivision the chair "Information systems" ("IS") of the faculty "Applied mathematics control processes" ("AM-CP") of "SPbSU", the address of organization - RF, 199034, Saint-Petersburg city, Universitetskaya emb., h. 7-9, the date of start and end of training / attachment from the 01st of July 2018 y. to the 31st of December 2018 y., the qualification "The applicant of scientific degree" on the specialty 05.13.01 – "The system analysis, control and information processing" [the agreement about the attachment for the preparation of dissertation on the competition of scientific degree of the candidate of sciences without the study of programs of training of scientific-pedagogical personnel in the postgraduate study of the sample of "SPbSU" from the 25.06.2018 y. № 9.2018.1 / S, the additional higher professional education, technical sciences].

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2.2.	The scientific degree	No
2.3.	The scientific degree of the candidate of sciences (in the presence), the year of award  The scientific rank (in the presence), the number of certificate	2.3.1. The scientific rank ""The author of the unique technology" of cognitive modeling" (for the system analysis of the information-educational environments, the financial analysis of the (credit) organizations and the complex analysis of the difficult objects, processes and phenomena (nuclear polymers)) according to the items 1542, 1543, 1544, 1545, 1546, 1547 and 1551 of "CC of RF" ("AUT (CMT SFA)" – the author of technology of double, threefold and more appointment in different areas) [on the 07th of June 2004 y. there were published two sections "The tendencies of development of the information environment of remote education" and "The cognitive model for the adaptive systems of remote training" in the collective scientific monography "The factors of success in the educational activity of modern HEI" of "The international Higher education academy of sciences" ("IHEAS")]. 2.3.2. The honorary scientific rank "The founder of the new (academic) scientific direction "Cognitive informatics (computer science), cognitive modeling technology for the system and finance analysis"", which is directly added in to "The registry of the new scientific directions"
		of "The Russian academy of natural science" ("RANS") [according to the decision of "The Presidium of "RANS"",
		the protocol № 699 from the 08 <sup>th</sup> of June 2018 y.].

3. The printing activity

J. IIIC	printing activity	
3.1.	Researcher ID ("Web of science")	K-8655-2017
3.2.	Author ID ("Scopus")	-
3.3.	SPIN («РИНЦ»)	8395-4560
3.4.	The quantity of scientific works	265 (the 31 <sup>st</sup> of December 2018 y.)
	of the applicant,	
	in total	
3.5.	The quantity of publications	42 (c.t.s.) and 79 (d.t.s.)
	on the theme of dissertation	
3.6.	The quantity of publications	-
	on the theme of dissertation	
	in the editions, included	
	in the international databases	
	and the systems of citation <sup>1</sup>	
3.7.		05 (c.t.s.) and 12 (d.t.s.) scientific articles
	The quantity of publications	in the scientific journals,
	on the theme of dissertation	recommended by "HAC of RF"
	in the editions from "The list of reviewed	for the publication of scientific results
	scientific editions" <sup>2</sup>	of the dissertations
	(without duplicating of publications	on the competition of scientific degree
	in the editions, included	of the candidate and doctor of sciences
	in to the international databases	[there is fulfilled the requirement on c.t.s 02 s.a.];
	and the systems of citation)	[there is fulfilled the requirement on d.t.s 10 s.a.]

<sup>&</sup>lt;sup>1</sup> "Web of science", "Scopus", "PubMed", "MathSciNet", "zbMATH", "Chemical abstracts", "Springer", "GeoRef". <sup>2</sup> The list of reviewed scientific editions is formed in accordance with the order of "Mineduscience of Russia" from the 12<sup>th</sup> of December 2016 y. № 1586.

#### 4. The details about dissertation work

4.1.	The theme of dissertation	"The anning ment of automated to sining
7.1.	The dieme of dissertation	"The environment of automated training with the properties of adaptation
4.2.	The dissertation on the competition	based on the cognitive models"
4.2.	of scientific degree	on the competition of scientific degree
	of the candidate of sciences /	of the candidate of technical sciences
	the doctor of sciences	
4.3.		05 12 01 "77"
4.3.	The cipher of scientific specialty	05.13.01 – "The system analysis, control
4.3.1.	The name of the branch of science	and information processing"  technical sciences
4.3.2.	The area of research /	UDC 681.513.66+004.81
	specialization (in the presence)	the adaptive systems of automatic control
	in the context of scientific specialty	with the determined entrance influences
		and the reference cognitive models
		of the subject of training and the means of training,
		the reconstructed models of the cognitive processes
4.4.	The cipher of the second scientific specialty	-
	(in the presence)	
4.4.1.	The name of the second branch of science	-
4.4.2.	The second area of research /	-
	specialization (in the presence)	
	in the context of scientific specialty	
4.5.	Key words	The system and financial analysis and control,
		information technologies,
		information-educational environments,
		automated training systems
		(at distance),
		innovative architectures and algorithms
		in the basis of automation means,
		(unique) cognitive modeling technology,
		(cognitive) informatics,
		psychophysiology of perception,
		cognitive psychology
		and applied linguistics.
4.6.	The compliance to the priority	item 2. "The industry of nano-systems" (c.t.s. and d.t.s.).
	directions of the development	item 3. "The information-telecommunication
	of science, technologies and technics	systems" (c.t.s. and d.t.s.).
	(see Appendix 1)	
4.7.	The compliance to the critical	item 8. "Nano-, bio-, information,
	technologies	cognitive technologies" (c.t.s. and d.t.s.).
	(see Appendix 1)	item 12. "The technologies of access to the broadband
		multimedia services" (c.t.s. and d.t.s.).
		item 18. "The technologies and software
		of distributed and high-performance
		computing systems" (c.t.s. and d.t.s.).

4.9. The compliance to the priorities of scientific-technological development (see Appendix 1)  The definition of the priorities of science (see Appendix 1)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of sciences" (see Appendix 2)  The area of research from the list of the methods of humanitarian and social sciences (c.t.s. and d.t.s.), "Other natural and exact sciences" — (see Appendix 2)  The area of research from the list of the method social sciences and public health care "— (see Appendix 2)  The area of research from the list of the method social sciences and public health care "— (see Appendix 2)  The area of research from the list of the method social sciences (see Appendix 2)  The area of research from the list of the method sciences (see Appendix 2)  The area of research from the list			/
(see Appendix 1)  robotic systems, new materials and ways of constructing, the creation of the systems of processing of the large volumes of data, machine learning and artificial intelligence (c.t.s. and d.t.s.); +0) transition to the personalized medicine, high-technological health care and technologies of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.); g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.).  "Natural and exact sciences" — "Computer and information sciences" — item 51. "Informatics — information systems" (c.t.s. and d.t.s.). "Other natural and exact sciences" — item 73. "Multidisciplinary sciences" (c.t.s. and d.t.s.). "Medical sciences and public health care" — "Clinical medicine" — item 111. "Oprhinalmology" (c.t.s. and d.t.s.). "Technics and technologies" — item 210. "Medical laboratory technologies" (c.t.s. and d.t.s.). "Other technologies" — item 210. "Medical laboratory technologies" (c.t.s. and d.t.s.). "Other technologies" — item 220. "Tools and devices" (c.t.s. and d.t.s.). "Electrical-technics, electronic technics, information technologies" — item 2238. "Automated	4.8.	The compliance to the priorities	+a) transition to the advanced digital,
new materials and ways of constructing, the creation of the systems of processing of the large volumes of data, machine learning and artificial intelligence (c.t.s. and d.t.s.);  +c) transition to the personalized medicine, high-technological health care and technologies of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.);  g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.).  The area of research from the list of "Web of science" (see Appendix 2)  "Natural and exact sciences" — "Computer and information sciences" — item \$1. "Informatics — information systems" (c.t.s. and d.t.s.). "Other natural and exact sciences" — item \$3. "Multidisciplinary sciences" — item \$11. "Otorhinolaryngology" (only otology) (c.t.s. and d.t.s.). "Technics and technologies" — item \$11. "Otorhinolaryngology" (c.t.s. and d.t.s.). "Technics and technologies" — item \$210. "Medical laboratory technologies" (c.t.s. and d.t.s.). "Other technologies" — item \$210. "Medical laboratory technologies" (c.t.s. and d.t.s.). "Electrical-technics, electronic technics, information technologies" — item \$238. "Automated		of scientific-technological development	intellectual production technologies,
the creation of the systems of processing of the large volumes of data, machine learning and artificial intelligence (c.t.s. and d.t.s.); +c) transition to the personalized medicine, high-technological health care and technologies of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.); g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.).  The area of research from the list of "Web of science" (see Appendix 2)  The area of research from the list of "Web of science" (c.t.s. and d.t.s.). "Other natural and exact sciences" — item 51. "Informatics — information sciences" — item 73. "Multidisciplinary sciences" — item 111. "Otorhinology" (c.t.s. and d.t.s.). "Technics and d.t.s.). "Technics and technologies" — item 112. "Ophthalmology" (c.t.s. and d.t.s.). "Technics and technologies" — item 210. "Medical laboratory technologies" (c.t.s. and d.t.s.). "Other technologies" — item 220. "Tools and devices" (c.t.s. and d.t.s.). "Electrical-technics, electronic technics, information technologies" — item 238. "Automated		(see Appendix 1)	robotic systems,
of the large volumes of data, machine learning and artificial intelligence (c.t.s. and d.t.s.); +c) transition to the personalized medicine, high-technological health care and technologics of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.); g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.).  "Natural and exact sciences" — item 51. "Informatics - information systems" (c.t.s. and d.t.s.). "Cetter natural and exact sciences" — item 73. "Multidisciplinary sciences" (c.t.s. and d.t.s.), "Medical sciences and public health care" — — Clinical medicine" — item 111. "Otorhinolaryngology" (only otology) (c.t.s. and d.t.s.), "Technics and technologies" — item 210. "Medical laboratory technologies" (c.t.s. and d.t.s.). "Other technologies" — item 220. "Tools and devices" (c.t.s. and d.t.s.). "Electrical-technics, electronic technics, information technologies" — item 238. "Automated			new materials and ways of constructing,
machine learning and artificial intelligence (c.t.s. and d.t.s.); +c) transition to the personalized medicine, high-technological health care and technological health care and technologies of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.); g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.). "Natural and exact sciences" – item 51. "Informatics – information sciences" – item 73. "Multidisciplinary sciences" (c.t.s. and d.t.s.). "Other natural and exact sciences" (c.t.s. and d.t.s.). "Medical sciences and public health care" – "Clinical medicine" – item 111. "Otorhinolaryngology" (only otology) (c.t.s. and d.t.s.), item 112. "Ophthalmology" (c.t.s. and d.t.s.). "Technics and technologies" – item 210. "Medical laboratory technologies" item 210. "Medical laboratory technologies" item 220. "Tools and devices" (c.t.s. and d.t.s.) "Electrical-technics, electronic technics, information technologies" – item 238. "Automated			the creation of the systems of processing
and artificial intelligence (c.t.s. and d.t.s.); +c) transition to the personalized medicine, high-technological health care and technologies of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.); g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.).  "Natural and exact sciences" — "Computer and information sciences" — item 51. "Informatics - information systems" (c.t.s. and d.t.s.). "Other natural and exact sciences" — item 53. "Multidisciplinary sciences" (c.t.s. and d.t.s.), item 111. "Otorhinolaryngology" (only otology) (c.t.s. and d.t.s.), item 112. "Ophthalmology" (c.t.s. and d.t.s.). "Technical medicine" — item 111. "Otorhinolaryngology" (only otology) (c.t.s. and d.t.s.), item 112. "Ophthalmologies" — item 210. "Medical laboratory technologies" item 210. "Medical laboratory technologies" (c.t.s. and d.t.s.) "Cother technologies" — item 220. "Tools and devices" (c.t.s. and d.t.s.) "Electrical-technics, electronic technics, information technologies" — item 238. "Automated			of the large volumes of data,
+c) transition to the personalized medicine, high-technological health care and technologies of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.); g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.).  The area of research from the list of "Web of science" (see Appendix 2)  "Natural and exact sciences" – item 51. "Informatics – information sciences." – item 73. "Multidisciplinary sciences" (c.t.s. and d.t.s.). "Other natural and exact sciences" – item 111. "Otorhinolaryngology" (only otology) (c.t.s. and d.t.s.), item 112. "Ophthalmology" (c.t.s. and d.t.s.). "Technics and technologies" – item 210. "Medical laboratory technologies" – item 210. "Medical laboratory technologies" – item 220. "Tools and devices" (c.t.s. and d.t.s.). "Electrical-technologies." – item 220. "Tools and devices" (c.t.s. and d.t.s.). "Electrical-technologies." – item 220. "Tools and devices" (c.t.s. and d.t.s.) and control technologies." – item 220. "Tools and devices." (c.t.s. and d.t.s.) and d.t.s.) and d.t.s.). "Electrical-technologies." – item 220. "Tools and devices." (c.t.s. and d.t.s.) and d.t.s.) and d.t.s.) and d.t.s.) and d.t.s. and d.t.s. and d.t.s.) and d.t.s.			machine learning
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			control systems" (c.t.s. and d.t.s.).

4.10. The organization 4.10.1. The country -RF, of the place of execution the name of organization - "SPbSETU "LETI"", of dissertation (in the presence) the departmental accessory "Mineduscience of Russia" the type of organization -"FSAEEHE the name of structural subdivision— the chair "ACP" of the faculty "CTI" of "SPbSETU "LETI"", the address of organization - RF, 197376, Saint-Petersburg city, st. Prof. Popov, h. 5, the date of start and end at training / attachment – from the 01<sup>st</sup> of May 2003 y. to the 31<sup>st</sup> of August 2005 y. [full-time training in post-graduate study according to the copy of the approved individual training plan of work of postgraduate student (Vetrov A.N.) from the 01<sup>st</sup> of May 2003 y., certified by the deputy of head of "The personnel department" of "SPbSETU" LETI"" Šarayev N.A. on the 03<sup>rd</sup> of July 2007 y., certified by the head of "The personnel department" of "SPbSETU "LETI"" Šhubinsky V.N. on the  $19^{th}$  of February 2010 y. -23 sh., 23 p. and the work as the teacher (lectures and practice) according to the copy of the approved individual plan of teacher (Vetrov A.N.) for 2004-2005 ac. y., certified by the head of "The personnel department" of "SPbSETU "LETI"" Shubinsky V.N. on the  $12^{th}$  of September 2008 y. -9 sh., 9 p., the copy of the approved individual plan of teacher (Vetrov A.N.) for 2005-2006 ac. y., certified by the head of "The personnel department" of "SPbSETU "LETI"" Shubinsky V.N. on the 12<sup>th</sup> of May 2008 y. – 9 sh., 9 p. and other individual plans of teacher (Vetrov A.N.) for 2006-2007 ac. y., for 2007-2008 ac. y., for 2008-2009 ac. y. and for 2009-2010 ac. y.], 4.10.2. <u>The country</u> – RF, the name of organization -"SPbSU" the departmental accessory— "Mineduscience of Russia", the type of organization -"FSBEEHE the name of structural subdivision— the chair "IS" of the faculty "AM—CP" of "SPbSU", the address of organization - RF, 199034, Saint-Petersburg city, *Universitetskaya emb., h. 7-9,* the date of start and end at training / attachment – from the  $01^{st}$  of July 2018 y. to the  $31^{st}$  of December 2018 y. [the attachment for the organization of defence according to the approved agreement from the 25.06.2018 y. № 9.2018.1 / S about the attachment for the preparation of dissertation on the competition of scientific degree of the candidate of science without the study of programs of the preparation of scientific-pedagogical personnel in the post-graduate study, signed by the applicant, "AUT CMT SFA" Vetrov A.N. and the acting as the head of "The department of scientific researches" ("DSR") of "SPbSU Ťarasov A.M. (with stamp seal of "SPbSU") - 4 sh., 4 p.].

5. The details about scientific supervisor /scientific consultant

	Leature Continue supervisor /scientific e	
5.1.	Last name, first name and patronymic	Kvitko Alexander Nikolaevich
	(completely)	
	(the last in the presence)	
5.2.	The scientific degree	doctor of physical-mathematical sciences
5.3.	The scientific rank (in the presence)	professor
5.4.	The place of work and post	the country – RF,
		the name of organization –
		"SPbSU",
		the departmental accessory –
		"Mineduscience of Russia",
		the type of organization - "FSBEEHE",
		the name of structural subdivision -
		the chair "IS" of the faculty "AM – CP"
		of "SPbSU",
		the post – the professor of the chair "IS"
		of the faculty "AM – CP" of "SPbSU",
		the address of organization – RF, 199034,
		Saint-Petersburg city,
		Universitetskaya emb., h. 7-9.

Benund Vetrov A.N.

The applicant of scientific degree, ""the author of the unique technology" of cognitive modeling for the system, financial and complex analysis at the micro-level"

### THE PRIORITY DIRECTIONS OF DEVELOPMENT OF SCIENCE, TECHNOLOGIES AND TECHNICS IN THE RUSSIAN FEDERATION

(The extract from The decree of The President of The Russian Federation from the 07th of July 2011 y. №899 "About the approval of the priority directions of development of science, technologies and technics in The Russian Federation and the list of critical technologies of The Russian Federation")

- 1. The security and counteraction to terrorism.
- +2. The industry of nano-systems (c.t.s. and d.t.s.).
- +3. The information-telecommunication systems (c.t.s. and d.t.s.).
- 4. The sciences about life (03.00.00).
- 5. The perspective kinds of arms, military and special technics.
- 6. The rational environmental-management.
- 6.1. The robotic complexes (systems) of military, special and dual use.
- 7. The transport and space systems.
- 8. The energy-efficiency, energy-conservation, nuclear power engineering.

#### THE LIST OF CRITICAL TECHNOLOGIES OF THE RUSSIAN FEDERATION

(The extract from The decree of The President of The Russian Federation from the 07th of July 2011 y. №899 "About the approval of the priority directions of development of science, technologies and technics in The Russian Federation and the list of critical technologies of The Russian Federation")

- 1. The basic and critical military and industrial technologies for the creation of perspective kinds of arms, military and special technics.
- 2. The basic technologies of power electrical-engineering.
- 3. The bio-catalytic, bio-synthetic and bio-sensory technologies.
- 4. The bio-medical and veterinary technologies.
- 5. The genomic, proteomic and postgenomic technologies.
- 6. The cellular technologies.
- 7. The computer modeling of nano-materials, nano-devices and nano-technologies.
- +8. *The nano-, bio-, information and cognitive technologies (c.t.s. and d.t.s.).*
- 9. The technologies of nuclear power engineering, nuclear fuel cycle, safe handling with radioactive waste and spent nuclear fuel.
- 10. The technologies of bio-engineering.
- 11. The technologies of diagnostics of nano-materials and nano-devices.
- +12. The technologies of access to the broadband multimedia services (c.t.s. and d.t.s.).
- 13. The technologies of information, control and navigation systems.
- 14. The technologies of nano-devices and micro-system technics.
- 15. The technologies of new and renewable sources of energy, including hydrogen power engineering.
- 16. The technologies of production and processing of constructional nano-materials.
- 17. The technologies of production and processing of functional nano-materials.
- +18. The technologies and software of distributed and high-performance computing systems (c.t.s. and d.t.s.).
- 19. The technologies of monitoring and predicting of the condition of environment, preventing and eliminating of its pollution.
- 20. The technologies of prospecting, exploration and development of the deposits of mineral resources and their extraction.
- 21. The technologies of preventions and elimination of the emergency situations of natural and technogenic character.
- 22. The technologies of reduce of the losses from the socially significant diseases.
- 23. The technologies of creation of the high-speed trasport facilities and the intellectual control systems of new kinds of transport.
- 24. The technologies of creation of the rocket-space and transport technics of the new generation.
- 25. The technologies of creation of the electronic component base and the energy-efficient light devices.
- 26. The technologies of creation of the energy-conservation systems of transportation, distribution and use of the energy.
- 27. The technologies of energy-efficient production and conversion of the energy on the organic fuel.

## THE PRIORITIES AND PERSPECTIVES OF THE SCIENTIFIC-TECHNOLOGICAL DEVELOPMENT OF THE RUSSIAN FEDERATION

(The extraction from The decree of The President of The Russian Federation from the 01<sup>st</sup> of December 2016 y. №642 "The strategy of the scientific-technological development of The Russian Federation")

- +a) transition to the advanced digital, intellectual production technologies, robotic systems, new materials and ways of constructing, the creation of the systems of processing of the large volumes of data, machine learning and artificial intelligence (c.t.s. and d.t.s.);
- b) transition to the ecologically cleaner and resource-saving power engineering, the increase of efficiency of the extraction and deep recycling of hydrocarbon raw materials, the formation of new sources, ways of transportation and storage of the energy;
- +c) transition to the personalized medicine, high-technological health care and technologies of health-saving, including due to the rational application of medical drugs (first of all the antibacterial) (c.t.s. and d.t.s.);
- d) transition to the highly-productive and ecologically cleaner agro- and aqua-economy, the development and introduction of the systems of rational application of the chemical and biological protection of agricultural plants and animals, the storage and efficient recycling of agricultural production, the creation of safe and quality, including the functional food products;
- e) counteraction to the techno-genic, bio-genic, socio-cultural threats, terrorism and ideological extremism, and also as cyber-threats and other sources of danger for the society, economics and country;
- f) the connectivity of territory of The Russian Federation due to the creation of intellectual transport and telecommunication systems, and also the occupation and retention of leadership positions in the creation of international transport-logistic systems, the development and use of outer space and air space, The World ocean, Arctic and Antarctic;
- +g) the ability of effective respond of the Russian society on the big challenges taking into account the interaction of human and nature, human and technologies, social institutes at the modern stage of global development, including the application of the methods of humanitarian and social sciences (c.t.s. and d.t.s.).

### The list of areas of researches ("Web of science")

$N_{\underline{0}}$	The area	No	The area	No	The area
s/	of research	s/	of research	s/	of research
S		S		S	
	Humanitarian sciences		Medical sciences		MMI and mass
			and public		communications
			health care		
	Science of art		Clinical	186	Theory
			medicine		of information
					and library science
1	Architecture	93	Obstetrics		Social
			and gynecology		and economic
					geography
2	Art	94	Allergology	187	Geography
3	Cinema, radio	95	Andrology	188	Researches
	and television				of environment
4	Musicology	96	Anesthesiology	189	Logistics
					and organization
					of transportations
5	Theater science	97	Audiology and pathology	190	International
			of speech		relations
					and regional science
6	Choreography	98	Diseases	191	Planning
	8-17-17		of peripheral vessels		and development
	History and archeology	99	Gastroenterology	192	Urbanistics
			and hepatology		
7	Archeology	100	Hematology		Sociological
	8,				sciences
8	History	101	Geriatrics	193	Anthropology
			and gerontology		1 23
9	History and philosophy	102	Gerontology	194	Gender
	of science				researches
10	History of social	103	Dermatology	195	Demography
	sciences				
11	History of era	104	Respiratory system	196	Researches
	of Middle ages				of social
	and Renaissance				problems
	Other	105	Integrative	197	Social
	humanitarian sciences		and complementary		sciences –
			medicine		mathematical
					methods
12	Interdisciplinary	106	Clinical neurology	198	Family and psychology
	researches in the area				of family
	of humanitarian sciences				relations

		,	13		
$N_{\underline{0}}$	The area	No	The area	No	The area
s/	of research	s/	of research	s/	of research
S		S		S	
	Philosophy, ethics,	107	Medicine of accidents	199	Social work
	religious science				
13	Religious science	108	Neuro-visualization	200	Sociology
14	Philosophy	109	Oncology	201	Ethnology
15	Ethics	110	Orthopedics		Economics
					and business
	Languages	111	+Otorhinolaryngology	202	Research
	and literature			202	of operations and methods
	and merature				of management
16	American	112	L Onlethalmalam	203	
10	literature	112	+ Ophthalmology	203	Management
17	Antiquity science	113	Pediatrics	204	Entre-
					preneur
					activity
18	Linguistics	114	Psychiatry	205	Labour
					relations
					and law
19	Literature	115	Resuscitation	206	Financial
	Diterature	113	Resuscitation	200	management
20	Literature	116	Rheumatology	207	Economics
20	of Great Britain	110	Kilcumatology	207	Economics
21	Literature	117	Dadialaar		Technics
21		11/	Radiology,		
	of German-speaking		radiation medicine,		and technology
	countries, Netherlands		medical		
	and Scandinavian countries		visualization		
22	Literary criticism	118	Cardiovascular		Medical
			system		technologies
23	Literature of the countries	119	Dentistry	208	Bio-medical
	of Africa, Australia,		and surgical		engineering
	Canada		dentistry		
24	Poetry	120	Therapy	209	Cellular
			and medical treatment		and tissue
					engineering
25	Romance literature	121	Transplantology	210	+ Medical
					laboratory
					technologies
26	Russian and Slavic	122	Urology and nephrology		Mechanics
	literature				and mechanical
					engineering
27	Theory of literature	123	Surgery	211	Aero-space
	and literary criticism	120	~ 31841		technics
28	Folklore science	124	Endocrinology	212	Mechanics
20	1 OIRIOTO SCICILO	124	and metabolism	212	1viconalites
			and metabolism		

			14		
No	The area	$N_{\underline{0}}$	The area	$N_{\underline{0}}$	The area
s/	of research	s/	of research	s/	of research
S		S		S	
29	Languages and linguistics		Sciences about health	213	General
					mechanical
					engineering
	Natural	125	Infectious	214	Thermo-dynamics
	and exact sciences	123	diseases	217	Thermo dynamics
	Biological sciences	126	Information	215	Nuclear physics
	Biological sciences	120		213	and technologies
			technologies in the health care		and technologies
30	Dialagr	107			76.7 4 1 1 °
30	Biology	127	Research		Nano-technologies
			of drug	1	
			addiction,		
			substance abuse,		
			alcoholism		
31	Biology of sea	128	Medical	216	Nano-materials
	and fresh waters		deontology		and nano-technologies
32	Biology of development	129	Medical		Industrial
			rehabilitation		bio-technologies
33	Bio-physics	130	Medical services	217	Materials science –
					bio-materials
34	Bio-chemical methods	131	Sciences about Sport		Other technologies
	of research		1		
35	Bio-chemistry	132	Public	218	Images
	and molecular	102	health care,		and photographic
	biology		hygiene of environment,		technologies
	olology		hygiene of labor		teemologies
36	Virology	133	Social sciences –	219	Engineering –
30	Virology	133	bio-medicine	219	interdisciplinary
37	Canatias	124		220	+Tools
3/	Genetics	134	Organization	220	
20	and heredity	105	of health care	221	and devices
38	Zoology	135	Parasitology	221	Microscopy
39	Limnology	136	Primary medical	222	Industrial
			care		technologies
40	Mathematical	137	Food and dietology	223	Spectroscopy
	and computational				
	biology				
41	Mycology	138	Psychology,	224	Technologies
			psycho-analysis		of mechanical
					engineering
42	Micro-biology	139	Nurse business		Construction
					and architecture
43	Sciences about plants	140	Forensic medicine	225	Design
	P				and construction
					of civilian
					objects
44	Ornithology	141	Tropical medicine	226	Technologies
	Ommology	171	Tropical inculcine	220	of construction
					or construction

			15		
$N_{\underline{0}}$	The area	No	The area	$N_{\underline{0}}$	The area
s/	of research	s/	of research	s/	of research
S		S		S	
45	Reproductive		Fundamental	227	Transport
	biology		medicine		systems
					and technologies
46	Conservation	142	Anatomy and morphology		Technologies
	of biological		,		of materials
	diversity				
47	Cytology	143	Immunology	228	Materials science –
	<i>J UJ</i>		5)		paper and wood
48	Evolutionary	144	Clinical	229	Materials science –
	biology		bio-chemistry		ceramic
			or originistry		materials
49	Ecology	145	Clinical	230	Materials science –
	200061	1-73	psychology	230	composite
			psychology		materials
50	Entomology	146	Neuro-biology	231	Materials science –
30	Littomotogy	140	incuro-biology	231	
	Computer	147	Pathology	232	interdisciplinary  Materials science –
	and information	14/	Pathology	232	
	sciences			-	assessment
51		148	Taviaglacy	222	and testing  Materials science –
) 1	+Informatics –	148	Toxicology	233	
	information				films
50	systems Information	1.40	Dla amas a a s 1	224	and coatings
52	Informatics –	149	Pharmacology	234	Materials science –
	artificial		and pharmaceutics		textiles
	intelligence	4.50	D1 ' 1	225	and fabrics
53	Informatics –	150	Physiology	235	Metallurgy
·	cybernetics	15:			and metals science
54	Informatics –	151	Experimental		Chemical
	applications		medicine		technologies
55	Informatics –		Agricultural	236	Chemical
	program		sciences		technologies
	engineering				and industry
56	Informatics –		Veterinary sciences		Ecological
	theory and methods				bio-technologies
	Mathematics	152	Veterinary	237	Bio-technology
					and applied
					micro-biology
57	Logic		Animal-husbandry		Electrical-engineering,
			and dairy business		electronic
					technics,
					information
					technologies
58	Mathematics –	153	Agricultural	238	+ Auto-
	interdisciplinary		sciences –		mated
			dairy production		control
			and zootechnics		systems
	1 2		dairy production		

3.0		T = -	16	Т	
No	The area	№	The area	No	The area
s/	of research	s/	of research	s/	of research
S 50	M-41	S	0.1	S	~ 0
59	Mathematics – general		Other	239	Informatics –
			agricultural		architecture
			sciences		and hardware
60	Mathematical	154	Agrotechnics	240	Science
	physics				about communications
61	Applied	155	Food products	241	Robotics
	mathematics		and technologies		
			of production		
62	Statistics	156	Economics	242	Telecommunications
	and theory of probabilities		of agriculture		
			and agricultural policy		
	Sciences about The Earth		Agriculture,	243	Electrical-
	and related		forestry,		engineering
	ecological sciences		fisheries economy		and electronics
63	Water resources	157	Agronomics		Power engineering
				-	and rational
					nature-usage
64	Geology	158	Forestry	244	Geological
					mechanical
					engineering
65	Geo-chemistry	159	Soil science	245	Remote
	and geo-physics				sensing
66	Meteorology and sciences	160	Fishery	246	Mining
	about atmosphere				and processing
					of mineral resources
67	Mineralogy	161	Gardening,	247	Engineering
			vegetable growing		oceanography
68	Sciences about The Earth –	162	Agricultural	248	Oil
	interdisciplinary		sciences –		mechanical
	1 2		interdisciplinary		engineering
69	Sciences		Social sciences	249	Ship
	about environment				mechanical
					engineering
70	Oceanography		Sciences about education	250	Ecological
			The state of the s		engineering
71	Paleontology	163	Education –	251	Power engineering
, .			correctional		and fuel
72	Physical geography	164	Education –		min invi
, 2	inysical geography	107	scientific directions		
			Selemente directions		

			17		
No	The area	No	The area	No	The area
s/	of research	s/	of research	s/	of research
S		S		S	
	Other natural	165	Education		
	and exact sciences		and pedagogics		
73	+Multi-		Politological		
	disciplinary sciences		sciences		
	Physics and astronomy	166	International		
			relations		
74	Acoustics	167	Political sciences		
75	Astronomy	168	Public administration		
	and astro-physics		and politics		
76	Atomic,		Law		
	molecular				
	and chemical physics				
77	Optics	169	Criminology		
	A.		and penitentiary		
			system		
78	Applied physics	170	Jurisprudence		
79	Physics –		Other social		
	interdisciplinary		sciences		
80	Physics of fluid	171	Oriental science		
	and plasma			-	
81	Physics	172	Hotel business,		
	of condensed		leisure, sport and tourism		
	condition		Total of Spott with townsin		
82	Physics	173	Cultural science		
	of elementary particles				
	and quantum				
	theory of field				
83	Nuclear physics	174	Social sciences –		
			interdisciplinary		
	Chemical sciences		Psychological		
			sciences		
84	Analytical chemistry	175	Age psychology		
85	Crystallography	176	Mathematical		
			psychology		
86	Nonorganic	177	Sciences about behavior		
	and nuclear chemistry		of human and animals		
87	Organic chemistry	178	Public		
			psychology		
88	Polymers	179	Pedagogical		
			psychology		
89	Applied chemistry	180	Applied psychology		
90	Physical chrmistry	181	Psycho-biology		
91	Chrmistry –	182	Psychology		
	interdisciplinary		- 3 <i>J</i>		
92	Electro-chemistry	183	Psychology –		
-			interdisciplinary		
		184	Experimental		
			psychology		
		185	Ergonomics		
	L	1 100			