← [Act 1]

← [Act 2]

← [Act 3]

← [Act 4]

ITMO University in partnership with AI presents:

ITMO.2020

[Act 5]

ITMO UNIVERSITY

Center for Cognitive Technologies
National Technology Initiative

Национальная
технологическая инициатива
Пространство возможного
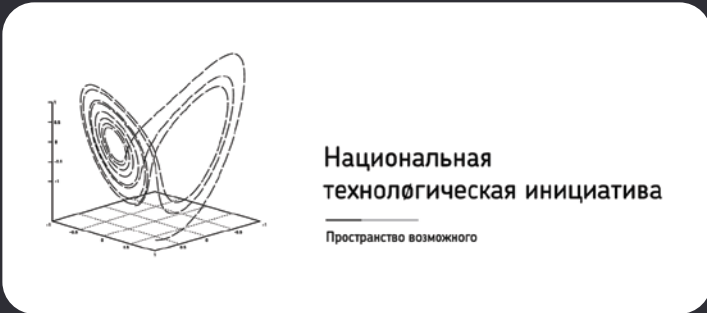
- ● Intelligent technologies for P4-Medicine and biometrics
- ● Intelligent technologies in virtual worlds
- ● Quantum cognitive technologies
- ● Cognitive educational technologies
- ● Natural language processing

Center's goal: a national ecosystem of machine learning and cognitive technologies' R&D, creating high-tech products and services for the digital economy
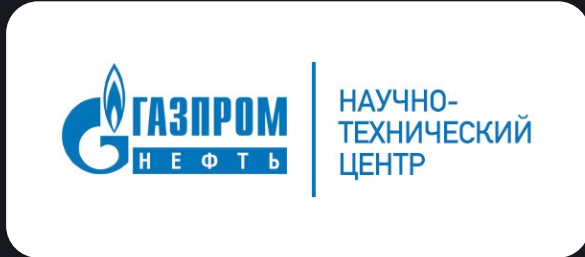
Center's consortium: 20+ leading organizations

МТС

Центр
Речевых
Технологий

ГАЗПРОМ НЕФТЬ | НАУЧНО-ТЕХНИЧЕСКИЙ ЦЕНТР

@ mail

Mobile Telecom
Systems
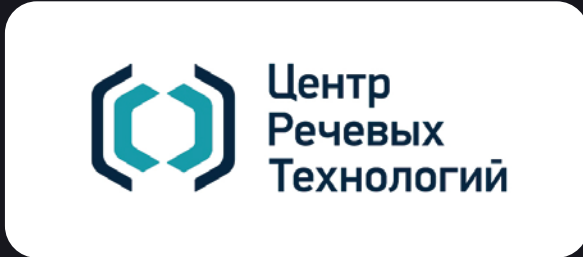
Speech Technology
Center

Gazpromneft Science
& Technology Center

Mail.ru

ЭР·ТЕЛЕКОМ

SBERBANK

ER-Telecom
Holding

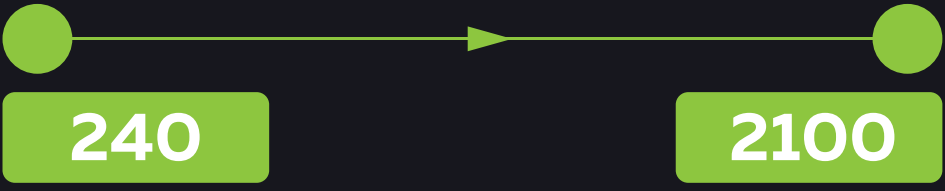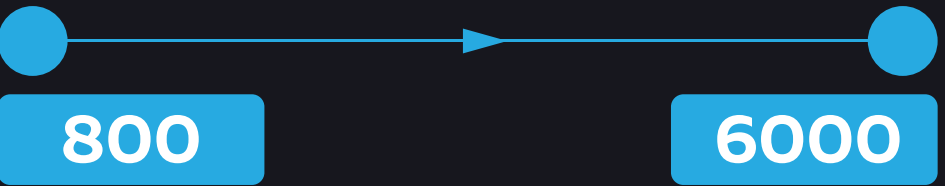Sberbank

Almazov National
Medical Research
Center

	2018	2024
Network Master's programs	6	52
Master's graduates	240	2100
Professional certificates	800	6000
Corporate centers	2	10
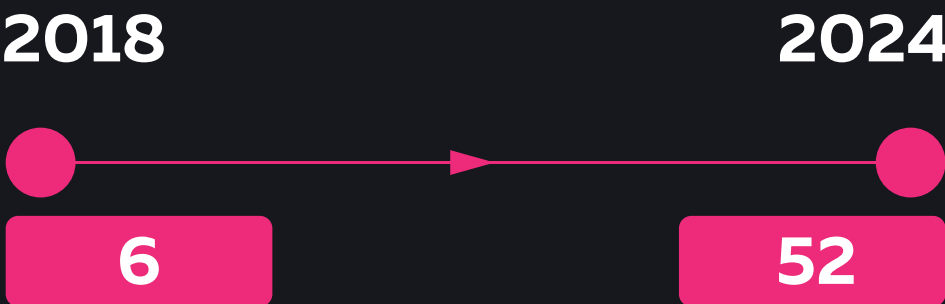
ITMO University at First Sight ❤️

Non-classical university

IT₂MOre than a **UNIVERSITY**

MISSION:
provide opportunities for the holistic development of individuals and to inspire them to tackle global challenges

Young team

Graduate focus

This year's intake:

1600	**2500**	**300**
BS	MS	PhD

Reputation

In THE ranking for top-100 best computer science universities in the world (2017,2018)

THE TIMES HIGHER EDUCATION

Values

- Openness
- Academic freedom
- Respect for the individual
- Integrity
- Love

ACM ICPC

7-time world champions in collegiate programming

TOP-5

In the top 5 institutions in Russia in terms of the quality of publications as per Springer Nature

Uploading progress report data for AI •

EDUCATION Data preprocessing

	2013	2018
Core set of ITMO disciplines		
Students studying digital culture, entrepreneurial culture, creative technologies, systematic, analytical and critical thinking, and soft skills	None	100%
External students involved online	None	150000
Individual educational tracks for each student	10%	45%
Talents from around the world		
Staff: Fellowship, Micro Fellowship and Professorship program	None	Successful
Students: International academic competitions for high–school students, "Open Doors" project, portfolio contest	None	3 mln online, 20000 in–person
Outgoing student mobility	2%	10%
Interdisciplinary Master's programs:	None	Running
Art & Science, Bioinformatics, Cognitive technologies and quantum intelligence, Molecular biosensing and biorobotics		
Types of Master's programs:	None	Introduced
Research 15% Entrepreneurial 10% Industrial 10% Corporate 35%		
International students	7.9%	17%
Blended learning	None	20%

Ekaterina Skorb
inorganic and physical chemistry
Department of Chemistry and Chemical Biology, Harvard University, USA

Roberto Morandotti
photonics, nonlinear optics

Center for Energy, Materials and Telecommunications, National Research Institute in Quebec, Canada

Fabio Bonsignorio
biorobotics

Biorobotics institute of the Scuola Superiore Sant'Anna in Pisa, Italy

Gary Hix
material chemistry

Faculty of Science and Engineering, Wolverhampton University, UK

Simone De Liberato
quantum light and matter

University of Southampton, UK

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Vladimir I. Ulyantsev
28 yrs old
Computer
technologies center
H-index: 6

Sergey V. Makarov
30 yrs old
Hybrid nanophotonics
and optoelectronics
center
H-index: 22

Ivan V. Iorsh
32 yrs old
Light-matter coupling
in nanostructures center
H-index: 20

Irina V. Melchakova
36 yrs old
Applied
radioengineering center
H-index: 5

Aleksandr A. Kapitonov
30 yrs old
Adaptive
and nonlinear
control systems center
H-index: 5

Vladimir V. Vinogradov
33 yrs old
Solution chemistry
of advanced materials
and technologies center
H-index: 12

Alexey A. Sergushichev
27 yrs old
Structural bioinformatics center
H-index: 10

RESEARCH Data preprocessing

	2013	2018
International Research Centers (IRC)		
Total no. of centers	2	29
Number of staff involved in IRC work	38	750
Internationalization of research		
Number of publications with international researchers	16%	48.6%
Number of international researchers	10	150
Number of megagrants	2	7
Research productivity		
Number of Scopus publications (per year)	487	2400
Citations per 1 publication (over 5-yr period)	1.5	>2.9
Young science		
Percentage of young researchers	25%	45%

HR for science

University's own
PhD degrees

30 international PhD programs incl. Paris Saclay,
France, McMaster University, Canada, University
of Amsterdam, the Netherlands introduced in 2017

Megascience

the ONLY Russian team involved in an experiment at the International European
X-Ray Free-Electron Laser Facility (European XFEL) — October 26-30, 2018
led by prof. Vladimir Dubrovskiy

BIG DATA 2013-2018

Indicator name	2013	2014	2015	2016	2017	2018	2020
Number of publications in Scopus database per researcher (over a 5 year period)	1.47	2.18	3.69	6.33	8.74	9.3	10.3
Average indicator of citations per researcher, calculated as an aggregate number of all the articles cited in Scopus (over a 5 year period)	2.5	3.4	5.96	12.61	24.32	25.5	28.1
Number of publications in Web of Science database per researcher (over a 5 year period)	1.03	1.45	2.61	4.89	7.40	7.50	8.30
Average indicator for citations per researcher, calculated as an aggregate number of all the articles cited by the Web of Science (over a 5 year period)	1.9	2.57	4.62	10.11	19.27	20.0	22.5
Percentage of ITMO articles in top 10% scientific journals by SJR, %	10.2	11.8	12.7	14.9	18	20	20
Number of Russian researchers holding a PhD degree	6	18	29	38	42	47	60+
Percentage of income from R&D projects in total university income, %	33.49	40.92	39.8	41.54	43.08	43	43
Volume of income derived from R&D projects, per one researcher, thousand rubles	1373	1955	2292	2429	2787	2900	3000
Average USE grade for the students of ITMO University enrolled in general educational programs, state-funded tuition and fees	85	83	80	87	90+	90+	90+
Number of students accepted into first year studies without additional examinations, as winners and finalists of academic competitions for high school students	219	221	153	193	371	341	320+
Percentage of 1st year Master's students holding Bachelor diplomas from other universities, %	39	38	39	53	62	70	70
Percentage of international students enrolled in general educational programs at the university, %	7.9	10.9	12.2	12.7	14.48	17.0	21.9
Percentage of international students enrolled in PhD Programs, %	3.2	5.5	9.0	13.5	13.5	16.0	17.0
Number of joint educational programs available in partnership with Russian universities and scientific organizations	0	1	1	2	2	8	16
Number of joint educational programs available in partnership with leading foreign universities and scientific organizations	9	27	37	52	48	52	55
Number of courses offered by ITMO University on open online platforms	1	7	11	26	38	50	65
Number of students enrolled in ITMO University online courses	0	0	18724	75499	116173	130000	850000

AI problem statement

Our vision for ITMO

[#Neural network tuning]

Collaborative and interdisciplinary environment

Quickly responds to changes in science, industry, business

Students and teachers take on new roles

A testing ground for new ideas, projects and technology

Principle of 4P: Proactive, professional, personalized and participatory

AI Search Results

2018 — To be done by 2020

We share our success

Talents
- Andrey Stankevich, Associate Professor — national computer science school team coach
- Training platforms for high school and university students around the world — 500000 participants

Quality
- 70% admissions from 260 universities around Russia
- Network programs: Perm, Ekaterinburg, Veliky Novgorod, Samara
- Quality of admissions: USE 90+
- Employment of graduates: Top 10 in Forbes ranking, Top 3 salaries in the IT industry

HR for research
- Free modules for alumni
- Fellowship & professorship program
- Science communication

Industry
- "Smart City - St. Petersburg" office
- Corporate Master's programs: Jet Brains, Sberbank, Siemens, MTS, Huawei
- 13 projects in partnership with industry in launching hi-tech production lines (decree #218)

Talents
- Robotics for school kids — World Robot Olympiad winners
- Kids project-based learning initiative

Quality
- Global admissions from 80+ countries, 350 universities
- Network programs: Far Eastern Federal University, Pacific National University, North Eastern Federal University
- Creating new jobs
- AI in education — guiding students through individual tracks
- Online courses: 850000 enrolled

HR for research
- Returning Russian Scientists program
- National policy for science communication
- Professional certificates

Industry
- AI-powered platforms for finance, telecom, healthcare, and city management
- Embodied intelligence for robotics, smart transportation, and critical infrastructure
- High-speed and efficient photonic devices for data transmission and processing
- Programmable molecular structures for personalized pharma and data storage

Beyond AI

Motivation
- Values
- Research, digital ethics
- One community — ITMO.FAMILY
- Shared governance

Creativity and inspiration
- Creative programs: Art & Science, Lighting design, Creative thinking
- Popularization of science: "quantum potential" stand-up, science slam
- 38 creative clubs for students and staff
- Science museum

Generating new
- Environment for supporting ideas: hackathons, acceleration programs, student R&D projects, contest for interdisciplinary projects, platforms for exchanging experience – ITMO.EXPERT, mentorship program
- Science for Highpark. Highpark is our lab

Balance as a driver for sustainable development

Education:
- Student as a mentor, professor as a student
- Online and face-to-face learning
- Full degree and professional certificates

Research:
- Fusion of the natural and the artificial
- Hype-immune and trending research
- Fundamental and applied research

What else can we delegate to AI?