

**Y**andex



**Faculty of Computer Science**

National Research University Higher School of Economics

# Faculty of Computer Science

Established in March 2014

**3**

Bachelor's Programmes

**12**

Labs and Research Centres

**6**

Master's Programmes

**257**

Faculty Members

**1**

Doctoral School

**10**

RSF Grants

**1773**

Students

**1**

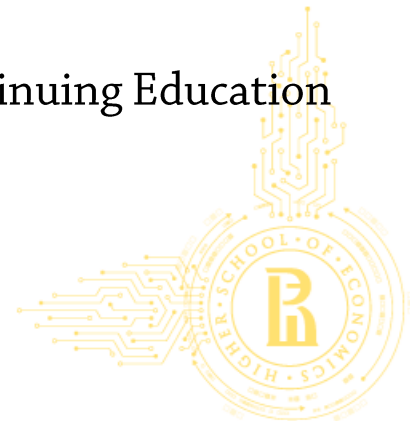
Centre for Student Competitions

**103**

Foreign Students

**1**

Centre for Continuing Education



# Bachelor's Programmes

**Applied Mathematics and Informatics**

**Yandex**

**724**

Students

**4**

Years

**Ru/En**

Language

**Software Engineering**

**ABET**

**519**

Students

**4**

Years

**Ru/En**

Language

**Data Science and Business Analytics (since 2018)**

**72**

Students

**4**

Years

**En**

Language

Awarding Body



Academic Direction



# Master's Programmes

**Data Science**



**146**

Students

**2**

Years

**Ru/En**

Language

**Statistical Learning  
Theory**

**Skolkovo Tech**

Skolkovo Institute of Science and Technology

**43**

Students

**2**

Years

**En**

Language



# Master's Programmes

**Financial Technologies and  
Data Analysis**



54

Students

2

Years

Ru/En

Language

**Data Analysis in Biology and  
Medicine**

32

Students

2

Years

Ru/En

Language



# Master's Programmes

**System and Software  
Engineering**

67

Students

2

Years

En

Language

**System  
Programming**

34

Students

2

Years

Ru/En

Language

**ISPRAS**



# Doctoral School

**PhD in Computer Science**

51

Students

3-4

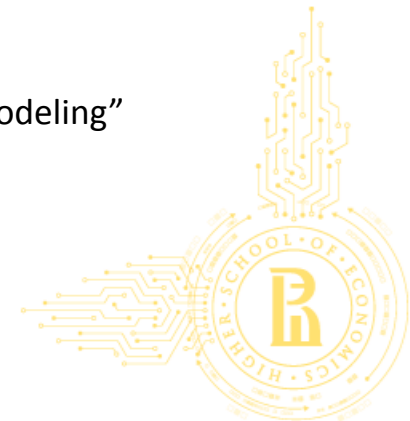
Years

Ru/En

Language

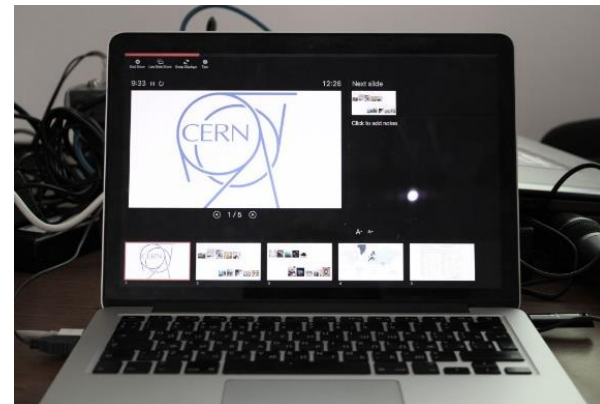
## Recent graduates:

- Yury Kashnitsky, “Methods Based on Closed Descriptions in Classification of Data with a Complex Structure”
- Alexey Masyutin, “Interval Pattern Structures Randomized Algorithms for Classification and Regression Tasks in Credit Risk Management”
- Anna Potapenko, “Semantic Vector Representations of Text with Probabilistic Topic Modeling”



# Research

- Deep Learning and Bayesian Methods Centre
  - Samsung-HSE Lab
  - Sberbank-HSE Financial Data Analysis Lab
- Process-Aware Information Systems Lab
- Methods for Big Data Analysis Lab
- Intelligent Systems and Structural Analysis Lab
- Stochastic Algorithms and High-Dimensional Inference Lab
- Theoretical Computer Science Lab
- Bioinformatics Lab
- Complex Systems Modeling and Control Lab
- Models and Methods of Computational Pragmatics Lab
- Applied Geometry and Topology Lab





# Joint Departments

Joint Department with Yandex

The logo for Yandex, featuring a large red 'Y' followed by the word 'andex' in black lowercase letters.

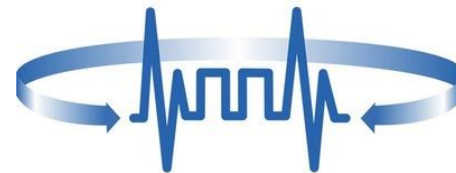
Joint Department with SAS

The logo for SAS, consisting of a blue stylized 'S' followed by the lowercase letters 'sas' in black.

Joint Department with the Federal  
Research Center of Computer Science  
and Control



Joint Department with the Institute  
for Information Transmission  
Problems



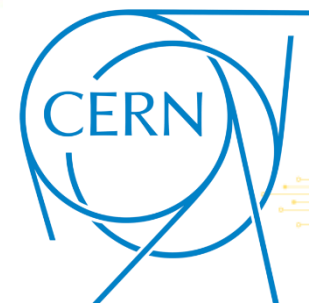
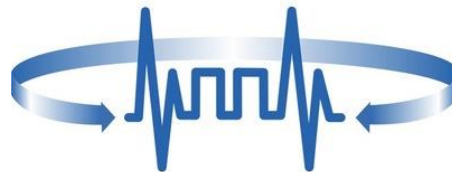
Joint Department with the Institute  
for System Programming SAS

The logo for ISPRAS, consisting of the letters 'ISPRAS' in white uppercase letters on a blue rectangular background.

# Partners

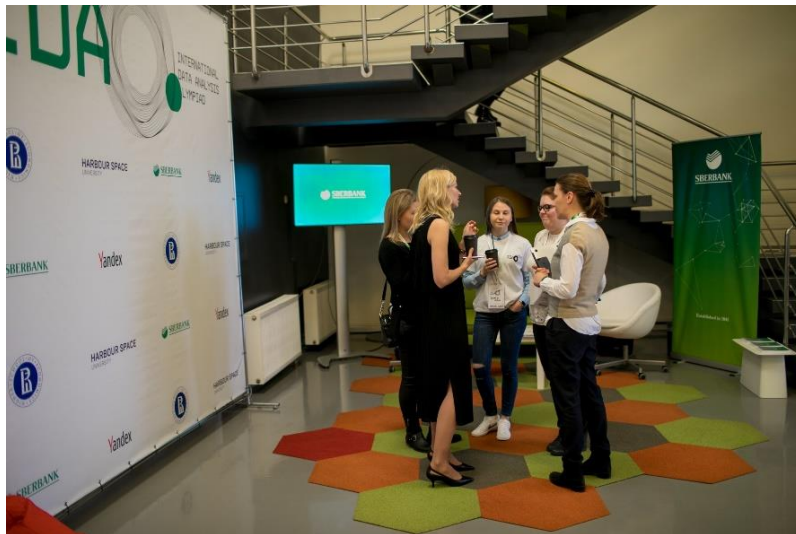


Skolkovo Institute of Science and Technology



## Joint Master's Programme in Financial Technologies and Data Analysis

- The Programme is offered in collaboration with Sberbank
- Sberbank covers 100% of tuition fee for students
- Practical classes with data science experts from Sberbank



## Joint projects:

- IDAO 2018 and 2019 - Sberbank was a partner of the Olympiad
- Centre of Deep Learning and Bayesian Methods helped Sberbank to solve several data science tasks





## Samsung-HSE Laboratory

- develops mechanisms of Bayesian inference in modern neural networks, which is to solve a number of problems in deep learning
- Between HSE Centre of Deep Learning and Bayesian Methods and Samsung AI Center
- Summer School on Deep Learning and Bayesian Methods



## The major areas of research are:

- Sparsification and acceleration of deep neural networks
- Ensembles of ML algorithms
- Uncertainty estimation and defenses against adversarial attacks
- Loss-based learning for Deep Structured Prediction
- Stochastic optimization methods
- Learning and inference methods for probabilistic models using tensor decomposition





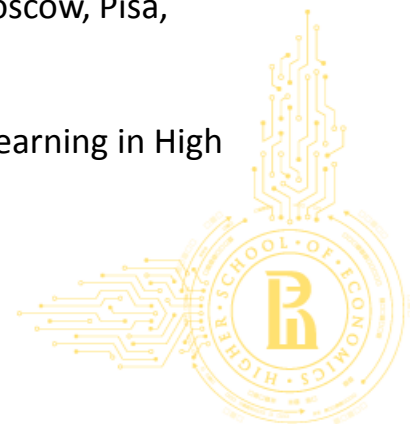
## HSE is an LHCb Associate Member at CERN

- HSE researchers have full access to data from the collaboration and allow the university to participate in various projects
- The group from HSE consists of researchers from the Laboratory of Methods for Big Data Analysis (LAMBDA)



## Joint events with CERN

- Annual CERN masterclass in particle physics: video conference between Moscow, Pisa, Paris, Cagliari, Rio de Janeiro.
- Summer School on Machine Learning in High Energy Physics



# International Summer Schools



## Summer School on Deep Learning and Bayesian Methods, 20–25 August 2019

- 96 participants (students, graduate students and industry representatives)
- 7 countries (Great Britain, Spain, Netherlands, Belarus, USA, France, Switzerland)
- In partnership with Samsung AI Center

**SAMSUNG**

## 5<sup>th</sup> Summer School on Machine Learning in High Energy Physics, 1 - 10 July 2019

- The School will take place in Hamburg, Germany
- In 2018 the Summer School was hosted in Oxford (UK) - 60 participants (students and faculty members) from 18 countries and 47 universities



Universität Hamburg  
DER FORSCHUNG | DER LEHRE | DER BILDUNG



# Rankings



	2017	2018	2019
<b>QS Overall</b>	411-420	382	343
<b>QS Under 50</b>	51-60	48	38
<b>QS Mathematics</b>	151-200	101-150	101-150
<b>QS Computer Science</b>	351-400	251-300	201-250



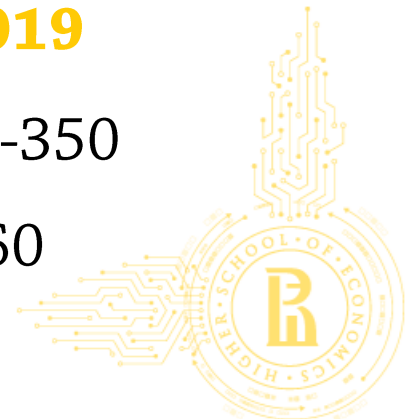
# Rankings



	2017	2018	2019
<b>ARWU Mathematics</b>	101-150	76-100	76-100

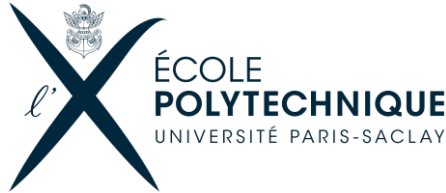


	2017	2018	2019
<b>THE Overall</b>	401-500	351-400	301-350
<b>THE Under 50</b>	96	84	60





# Foreign Partner Universities



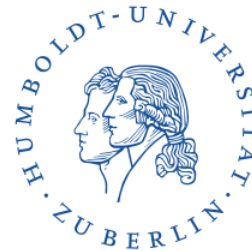
POLITECNICO  
DI MILANO



UNIVERSITEIT  
STELLENBOSCH  
UNIVERSITY



香港中文大學 (深圳)  
The Chinese University of Hong Kong, Shenzhen



Universidad  
Carlos III de Madrid  
[www.uc3m.es](http://www.uc3m.es)



Radboud  
Universiteit  
Nijmegen



SAN DIEGO STATE  
UNIVERSITY

UC San Diego



university of  
 groningen



# Competitions and Olympiads

Centre of Student Competitions of the Faculty of Computer Science helps students to prepare for various team and individual contests including ICPC, Yandex.Algorithm, Google Code Jam, Russian Code Cup and etc. HSE Faculty of Computer Science team won the bronze medal at ICPC World Finals 2019.

**2015**

**ICPC** Final Morocco



**2016**

**ICPC** Final USA



**2017**



**2018**

**ICPC** Final China



**2019**

**ICPC** Final Portugal  
Bronze Medal

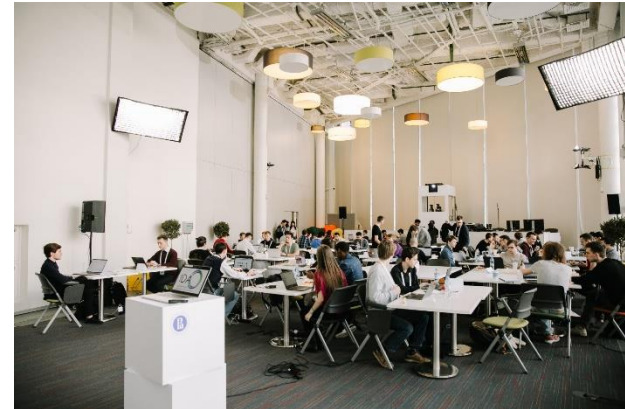


# International Data Analysis Olympiad

Higher School of Economics and Yandex organized the contest for the second time.

Key numbers of IDAO 2019:

- 1287 teams registered for the Online Round
- 78 countries
- 31 teams in the Final Round



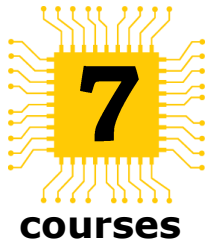
ORGANISERS



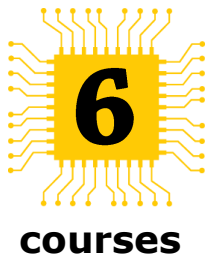
PARTNERS



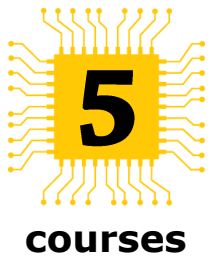
# Coursera specializations



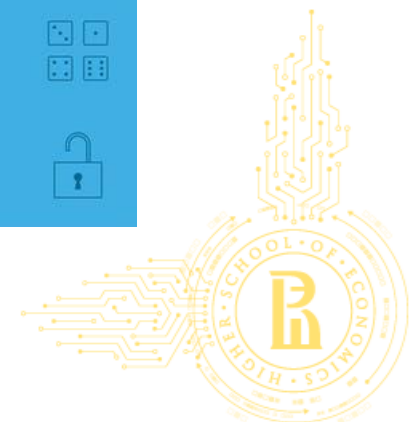
Advanced Machine Learning  
**Y**andex



Data Structures and Algorithms  
**Y**andex UC San Diego



Introduction to Discrete  
Mathematics for Computer Science  
**Y**andex UC San Diego







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