**Industrial immersion partner company** - industrial enterprise or organization of the industrial sector, a small innovative company, a subject of the Skolkovo ecosystem, an industry institute or an organization that realizes a project on governmental support of business development, accepting students for Industrial Immersion.

**Industrial Immersion project** focuses on a short-term development of assigned tasks of research, manufacturing or operational problems specified by the host company. Students solve the project task under supervision of a Skoltech professor or employee appointed to monitor the project.

**Terms:**
8 weeks during summer term

Assessment is carried out based on the report and poster
Host company: how to participate in the program

01 Propose technically attractive project

02 Provide equipped working places in the company’s office. Project implementation in the company’s environment is important for students exposure to a corporate culture

03 Assign an employee of the company to supervise the project/students

04 Develop a detailed technical task of the proposed project

05 Draw up a work plan with the students

06 Monitor the project progress

07 Assess report and approve project poster for Industry Day Conference.
190 projects in 2022

107 offline
3 online
80 hybrid

42% partner companies — Skolkovo residents
16% partner companies — Skoltech startups
Program partner companies in 2022

1. ABBYY
2. AbsoluteTech
3. Alfa-Bank
4. Alfasatcom
5. Applied Computational Technologies
6. Company name is protected by NDA
7. Artificial Intelligent Research Institute (AIRI)
8. Avaraty AI
9. Belka Technology
10. Bioimaging
11. Biomimetix
12. Biomolecule
13. Biotech Campus
14. Bloomtech
15. BostonGene
16. Cloning Facility
17. CompMechLab
18. Composite Vision
19. Core Technologies
20. Cryptochemistry
21. Crystera
22. Cyberphysics
23. Diagnostic and Telemedicine Center
24. Digital Petroleum
25. FlexLab
26. Gazpromneft STC
27. Gazpromneft Technological Partnerships
28. Genetico
29. Genomed
30. Company name is protected by NDA
31. International Gymnasium of the Skolkovo Innovation Center
32. International Laboratory of Stochastic Algorithms and High Dimensional Inference
33. Institute of Laser and Welding Technologies (ILIST)
34. InPiezo
35. Insilico
36. Intelligent Ideas
37. Integrant
38. IPG / IRE-Polus
39. IQsoft
40. IRA Labs
41. Kintech Lab
42. Knowledge Genesis
43. Kosima
44. KosmoLab
45. LabAdvance
46. Market Council
47. Matrix Wave
48. M-Granat
49. MoiTech
50. Motorica
51. MRM Proteomics R
52. M&S decisions
53. MTS
54. Nanosemantics Lab
55. NPP Impulse
56. Navigine
57. Neurotrend
58. Nissan
59. Novaprint 3D
60. Novosibirsk R&T Centre (NTNC)
61. O2ON
62. OilGene
63. Onder
64. Open Longevity
65. Philips
66. PhisTech
67. Fikilema Predictive
68. Pipe Metallurgical Company (TMK)
69. Plan-S Satellite and Space Technologies
70. Platform 3 opinion
71. Perm Research and Production Instrument-Making Company (PNPPK)
72. Grate
73. Quicktoken
74. Research Complex, Center for Technological Provision in Novosibirsk Academgorodok Technopark (IK CTO)
75. Research Institute of Railway Transport (VNIIZhT)
76. Rosebud Al
77. RSHB-Intech
78. Russian Quantum Centre (RQC)
79. Rustor
80. Samsung
81. Sakhalin Energy
82. Sberbank
83. SberMedAI
84. Siberian Generating Company
85. Sintez
86. Smart Staffing
87. SoKo
88. South Geotherm SPE
89. Space Technology and Services Centre
90. Tekvel
91. Tesart
92. Tesis
93. TetraQuant
94. Teyvian
95. Tirphonotics
96. Troitsk Engineering Center
97. TrackTrack
98. Tsuru Robotics
99. Unim
100. Vein CV
101. Vibrant
102. Visillect
103. VisionLabs
104. Yandex
105. Yevdokimov MSUMD, Orthodontics Lab
## Statistics

<table>
<thead>
<tr>
<th>Program</th>
<th>Students</th>
<th>Companies</th>
<th>Projects</th>
<th>Group &amp; interdisciplinary projects incl.</th>
<th>Project format</th>
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<tbody>
<tr>
<td>Advanced Computational Science</td>
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<td>30</td>
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<td>3</td>
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<tr>
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<td>11</td>
<td>16</td>
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<tr>
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<tr>
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<td>14</td>
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<tr>
<td>Photonics and Quantum Materials</td>
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<td>13</td>
<td>21</td>
<td>1</td>
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<tr>
<td>Space and Engineering Systems</td>
<td>20</td>
<td>14</td>
<td>15</td>
<td>4</td>
<td>10</td>
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<tr>
<td>Total</td>
<td>234</td>
<td>105</td>
<td>190</td>
<td>31</td>
<td>107</td>
</tr>
</tbody>
</table>

### Project format
- **Offline**: 80
- **Online**: 3
- **Hybrid**: 80
# Projects areas

<table>
<thead>
<tr>
<th>Projects areas</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advanced Computational Science</strong></td>
<td>mathematical modelling, modelling and automation of search, parallel computing, experiment automation</td>
</tr>
<tr>
<td><strong>Advanced Manufacturing Technologies</strong></td>
<td>functional materials, additive technologies, composite materials, mathematical modeling</td>
</tr>
<tr>
<td><strong>Data Science</strong></td>
<td>big data, data analytics, Artificial Intelligence</td>
</tr>
<tr>
<td><strong>Energy Systems</strong></td>
<td>energy markets, Artificial Intelligence in energy industry</td>
</tr>
<tr>
<td><strong>Internet of Things &amp; Wireless Technologies</strong></td>
<td>next generation wireless, data analysis, biomedical imaging, UAV, VR, information security, BCI, navigation systems</td>
</tr>
<tr>
<td><strong>Life Sciences</strong></td>
<td>genetic engineering, bioinformatics, infectious diseases, neurotechnologies, agricultural technologies, medical genetics</td>
</tr>
<tr>
<td><strong>Materials Science</strong></td>
<td>materials modeling, optimization of methods for synthesis of materials, measurement of material properties, research of electrochemical sensors</td>
</tr>
<tr>
<td><strong>Petroleum Engineering</strong></td>
<td>EOR, geomechanics, mathematical modelling, unconventional and hard to recover hydrocarbons, basin modelling</td>
</tr>
<tr>
<td><strong>Photonics and Quantum Materials</strong></td>
<td>laser technologies, optical and antenna elements, quantum algorithms, nanomaterials, biophotonics</td>
</tr>
<tr>
<td><strong>Space and Engineering Systems</strong></td>
<td>systems Engineering (+MBSE), the Earth remote sensing image processing, small space devices, robotics</td>
</tr>
</tbody>
</table>
Projects catalogue 2017-2021

More about the Industrial Immersion program you can find on the website
Advanced Computational Science (ACS)

- Students: 8
- Companies: 6
- Projects total: 6
- Group projects: 3*
- Online projects: 0
- Offline projects: 3
- Hybrid projects: 3

1. Gazpromneft STC
2. Samsung
3. Sberbank
4. Sintez
5. Vein CV
6. Yandex

* Including 1 interdisciplinary project with DS

Industrial Immersion Coordinator

Victoria Brighton
Advanced Computational Science

**Refinement of the prototype of the automatic search for the optimal field development system**

Skoltech supervisor
Vladimir Palyulin

**Develop automation tools for handling experiment results and visual reporting**

Develop and configure tools to control integrity and synchronize data

Skoltech supervisor
Ivan Oseledets

**Dataset for monitoring of natural resources**

Skoltech supervisor
Evgeny Burnaev

**Deep Learning Model development for Medical Image Analysis in Oncology**

*Interdisciplinary with DS*

Skoltech supervisor
Alexey Vishnyakov

**AutoTS framework in time series analysis**

Skoltech supervisor
Sergey Rykovanov

**Optimization of map-reduce operations with large mmapped-files due to multithreaded calculations**

Skoltech supervisor
Sergey Rykovanov
Advanced Manufacturing Technologies (AMT)

Students 18
Companies 16
Projects total 17
Group projects 1
Online projects 0
Offline projects 17
Hybrid projects 0

1. Applied Computational Technologies
2. *Company name is protected by a NDA*
3. Bioimaging
4. CompMechLab
5. Composite Vision
6. Cyberphysics
7. Diagnostic and Telemedicine Center
8. Industrial Project, Skoltech*
9. InPiezo
10. Institute of Laser and Welding Technologies (ILIST)
11. Research Complex, Center for Technological Provision in Novosibirsk Technopark (IK CTO)
12. Nissan
13. Pipe Metallurgical Company (TMK)
14. Research Institute of Railway Transport (VNIIZhT)
15. Sberbank
16. Tesis

Industrial Immersion Coordinator

Dmitry Krasovsky

*Company name is protected by NDA*
Advanced Manufacturing Technologies

Applied Computational Technologies

Gasdynamics of detonation thermal spray system

Skoltech supervisor
Dmitry Krasovsky

Time-series forecasting with neural networks

Skoltech supervisor
Timur Aslyamov

Visualization for oil & gas industry using streamlit

Skoltech supervisor
Petr Zhilyaev

BIOIMAGING

Studies of the optical properties of two dimensional MoS2

Skoltech supervisor
Stanislav Evlashin

Validation of micromechanics properties of polymer composite materials

Skoltech supervisor
Ivan Sergeichev

Development of a Method for Forming Synthetic Data of Inhomogeneities of Composite Materials Using CAD Tools

Skoltech supervisor
Alexander Safonov

Company name is protected by a NDA

Company name is protected by a NDA

Company name is protected by a NDA

Company name is protected by a NDA
Advanced Manufacturing Technologies

Using a hybrid approach in predictive analytics of electric power plants
Skoltech supervisor
Igor Uzhinsky

Estimation of parameters of the object's vibrations, leading to registration of a Doppler twinkling artifact on a screen of an ultrasound scanner, by a laser vibrometer
Skoltech supervisor
Loic Salles

Development of a rigid piezo actuator for a piezoelectric motor
Skoltech supervisor
Igor Shishkovsky

Direct Metal Deposition of gradient alloys
Skoltech supervisor
Stanislav Evlashin

Numerical modeling of delivery and pool melting for power of two dissimilar alloys during DED
Skoltech supervisor
Igor Shishkovsky

Research and analysis of physical and mechanical properties of polymer composite materials
Skoltech supervisor
Ivan Sergeichev
Advanced Manufacturing Technologies

**NISSAN MOTOR CORPORATION**

3D modelling efficient architecture for lithium-ion batteries components using innovative approach of parametric modelling based on functional representation, with the calculation of the capacity and power performance

Skoltech supervisor
Evgenii Maltsev offline

**Pipe Metallurgical Company (TMK)**

Materials characterization and corrosion evaluation of functional materials and coatings used in oil gas industry

Skoltech supervisor
Dmitriy Dzhurinskiy offline

**Research Institute of Railway Transport (VNIIZhT)**

Development and use of functional models as a predictive analytics tool for complex systems

Skoltech supervisor
Loic Salles offline

**SBERBANK**

Design of stable legged robot locomotion algorithms for walking up- and downstairs

Skoltech supervisor
Pavel Osinenko offline

**TeSIS**

Solving hydrodynamic tasks using the FlowVision software package

Skoltech supervisor
Aslan Kasimov offline

**Skoltech**
Students: 73
Companies: 30
Projects total: 59
Group projects: 12*
Online projects: 1
Offline projects: 22
Hybrid projects: 36

1. ABBYY
2. AbsoluteTech
3. Alfa-Bank
4. *Company name is protected by NDA
5. Artificial Intelligent Research Institute (AIRI)
6. Avatarify AI
7. Belka Technology
8. Huawei
9. International Laboratory of Stochastic Algorithms and High Dimensional Inference
10. IQsoft
11. IRA Labs
12. MRM Proteomics R
13. MTS
14. Nanosemantics Lab
15. Onder
16. Piklema Predictive
17. Philips
18. Platform 3 opinion
19. Quicktoken
20. Rosebud AI
21. RSHB-Intech
22. Samsung
23. Sberbank
24. Tevian
25. TrackTrack
26. Vein CV
27. Visillect
28. VisionLabs
29. Yandex
30. Yevdokimov MSUMD, Orthodontics Lab

Industrial Immersion Coordinator

Victoria Brighton

* Including 2 interdisciplinary projects with ACS and IoTWT
Data Science

Text simplification in Russian
Skoltech supervisor
Elena Gryazina

Development of an algorithm for dynamic pricing of insurance objects (cars) for a more transparent determination of the sum insured relative to the market
Skoltech supervisor
Alexey Zaytsev, Maxim Panov

Self-supervised learning in identifying unplanned drilling events
Skoltech supervisor
Alexey Zaytsev

Constructing an effective ensemble of models from a single self-supervised pre-trained neural network
Skoltech supervisor
Dmitry Dylov

Improving source code readability using neural network algorithms
Skoltech supervisor
Sergey Rykovanov

Company name is protected by NDA
Data Science

**Cameras pose confidence estimation for visual localization task**

Skoltech supervisor

Evgeny Burnaev

**BELKA TECHNOLOGY**

High load system development for data processing

Skoltech supervisor

Sergey Rykovanov

**Mathematical models and optimization in cloud computing problems**

Skoltech supervisor

Maxim Panov

**Research of methods of compression and acceleration of neural networks**

Skoltech supervisor

Alexey Zaytsev

**Company name is protected by NDA**

**Development of Language models for Question Answering and Code**

Skoltech supervisor

Maxim Panov

**Learnable variance stabilizing transformation of denoising task**

Skoltech supervisor

Maxim Panov
Data Science

Development of deep neural networks with long short-term memory (LSTM) in lossless compression
Training adaptive hash functions in lossless compression
Skoltech supervisor
Maxim Panov, Yury Yanovich

RGB-D Reconstruction of 3D objects
Skoltech supervisor
Alexey Artemov

Energy shaping for digital subcarrier modulation for fiber non-linearity mitigation
Skoltech supervisor
Alexey Frolov

Multilingual ASR solution for mining Speech-to-Speech translation data
Skoltech supervisor
Evgeny Burnaev

Cache utilization optimization by using run-time traces
Skoltech supervisor
Ivan Oseledets, Evgeny Burnaev

Topological Data Analysis for Synthetic Speech Detection
Skoltech supervisor
Evgeny Burnaev
Data Science

- **Development and verification of anomaly detection algorithms with application to the task of detecting suspicious transactions**
  - Skoltech supervisor: Maxim Panov
  - Status: offline

- **Development of reinforcement learning algorithms with applications to the trajectory generation problem for traffic agents**
  - Skoltech supervisor: Maxim Panov
  - Status: offline

- **Estimation of uncertainty of models for localization of key points on medical images**
  - Skoltech supervisor: Mikhail Belyaev
  - Status: hybrid

- **Segmentation of 3-D medical images based on object geometry to search for rare pathologies**
  - Skoltech supervisor: Mikhail Belyaev
  - Status: hybrid
Data Science

**MRM Proteomics R**

Knowledge graph for the analysis of biomedical data on bacterial molecular targets, antibiotics and antimicrobial resistance

Skoltech supervisor
Alexander Panchenko

**MTS**

Ticketland Recommender System

Skoltech supervisor
Evgeny Frolov

**Nanosemantics**

Creation of DeepFake Video using neural networks

Skoltech supervisor
Alexey Artemov, Maxim Panov

**Nanosemantics**

Development of a prototype service for noise reduction in audio with speech

Skoltech supervisor
Ivan Oseledets, Maxim Panov

**ONDER**

Development of a distributed ledger microservice for a system of settlements and payments between users and resource providers based on blockchain technology

Skoltech supervisor
Andrzej Cichocki

**Piklema Predictive**

Research of the decision support system for haul truck drivers

Skoltech supervisor
Elena Gryazina
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Skoltech Supervisor</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple-phase segmentation of the pancreas</strong></td>
<td>Dmitry Dylov</td>
<td>offline</td>
</tr>
<tr>
<td><strong>Development of a decision-making system for AI video analytics</strong></td>
<td>Ivan Oseledets</td>
<td>hybrid</td>
</tr>
<tr>
<td><strong>Develop neural networks for segmentation of lines and tubes</strong></td>
<td>Dmitry Dylov</td>
<td>offline</td>
</tr>
<tr>
<td><strong>Development of a service for the search and classification of leukocytes</strong></td>
<td>Ivan Oseledets</td>
<td>hybrid</td>
</tr>
<tr>
<td><strong>Compression of raw CT data</strong></td>
<td>Dmitry Dylov</td>
<td>offline</td>
</tr>
<tr>
<td><strong>Tokenization of loan portfolios in numbers</strong></td>
<td>Yury Yanovich</td>
<td>hybrid</td>
</tr>
</tbody>
</table>
Data Science

ROSEBUD.AI
Research of methods to guide generative content creation
Skoltech supervisor Andrzej Cichocki
hybrid

RSHB-INTECH
Development of a predictive model for identifying customers who are not inclined to return to the http://svoe-rodnoe.ru/ website
Skoltech supervisor Maxim Panov
offline

SAMSUNG
Development of a method for 3D segmentation and 3D object detection based on a fully convolutional neural network model
Skoltech supervisor Anh-Huy Phan
hybrid

SAMSUNG
Segmentation of object materials for 3D reconstruction
Skoltech supervisor Victor Lempitsky
hybrid

SAMSUNG
Analyze and compare methods for StyleGANv3 inversion and image editing
Skoltech supervisor Maxim Panov
hybrid

SAMSUNG
Develop a faster inference algorithm in diffusion models
Develop an algorithm for distillation of a given diffusion model
Skoltech supervisor Evgeny Burnaev, Maxim Panov
hybrid
Developing method for learnable real-time predictive rendering of head-avatars

Skoltech supervisor
Maxim Panov, Serguei Barannikov

Study and Implementation of Neural Matchers and semantics for visual localization
Study and implementation Visual Place Recognition for camera global localization

Skoltech supervisor
Gonzalo Ferrer

Study and Implementation of map creation algorithm for Indoor positioning system

Skoltech supervisor
Alexander Panchenko

Investigating user input patterns for interactive image segmentation

Skoltech supervisor
Alexey Zaytsev

Developing megapixel one-shot mesh-based avatars

Skoltech supervisor
Victor Lempitsky

Exploring alternative data for banking CRM applications

Skoltech supervisor
Alexander Zherebker
Develop algorithms for visual signature verification in documents

Skoltech supervisor
Andrey Somov

Development of a universal authority to increase the accuracy of identifying connections between legal act and its draft

Skoltech supervisor
Maxim Panov

Development of a model for segmentation and analysis of medical images of vasculature
* Interdisciplinary with IOTWT

Skoltech supervisor
Pavel Osinenko, Evgeny Nikolaev

Deep Learning Model development for Medical Image Analysis in Oncology
* Interdisciplinary with ACS

Skoltech supervisor
Maxim Panov, Alexey Zaytsev

Face-Skull Transfer Learning

Skoltech supervisor
Ivan Oseledets

Stack-based denoising analysis

Skoltech supervisor
Dmitry Dylov
Color constancy domain adaptation

Skoltech supervisor
Maxim Panov
offline

Face recognition algorithms development

Skoltech supervisor
Alexander Zherebker
hybrid

Applications of transformers in the recommended systems

Skoltech supervisor
Maxim Panov
offline

Modelling of uncertainty in graph machine learning

Skoltech supervisor
Alexander Panchenko
offline

Development of methods and algorithms for managing the processes of diagnosis and disclosure of the pathogenesis of dentofacial anomalies based on the integration and intellectual analysis of large data sets of anthropometric, radiation, functional research methods

Skoltech supervisor
Alexander Bernstein
hybrid
Energy Systems (ES)

Students: 9
Companies: 3
Projects total: 3
Group projects: 2
Online projects: 1
Offline projects: 0
Hybrid projects: 2

1. Market Council
2. Siberian Generating Company
3. Tekvel

Industrial Immersion Coordinator
Ekaterina Guseva
Energy Systems

Development of a methodology for calculating the coefficients of energy emissions of greenhouse gases
Skoltech supervisor
Henni Ouerdane

Identification of heat consumption anomalies of consumers by machine learning methods
Skoltech supervisor
Federico Martin Ibanez

Development of digital twin functions in the electric power industry
Skoltech supervisor
Vladimir Terzija

Development of an adaptive algorithm for blocking the trigger of the emergency event logger at a high noise level in the input signal
Skoltech supervisor
Vladimir Terzija
Internet of Things & Wireless Technologies (IoTWT)

Students 18
Companies 11
Projects total 16
Group projects 4*
Online projects 0
Offline projects 15
Hybrid projects 1

1. Alfasatcom
2. *Company name is protected by NDA
3. Bloomtech
4. *Company name is protected by NDA
5. Intelligent Ideas
6. Navigine
7. Neurotrend
8. Philips
9. Smart Staffing
10. Tesart
11. Vein CV

* Including 2 interdisciplinary projects with DS and SES
<table>
<thead>
<tr>
<th>Research Area</th>
<th>Team Members</th>
<th>Supervisor</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>Development of a frontend application in JavaScript with Vue.js framework</td>
<td></td>
<td>Skoltech supervisor</td>
<td></td>
</tr>
<tr>
<td>Development of REST API services for backend in Python</td>
<td></td>
<td>Sergey Rykovano, Andrey Somov</td>
<td>offline</td>
</tr>
<tr>
<td>Development of a UAV with a landing platform and testing in a physical simulator</td>
<td></td>
<td>Andrey Somov</td>
<td>offline</td>
</tr>
<tr>
<td>Secure multi-party computation for object detection</td>
<td></td>
<td>Alexey Frolov</td>
<td>offline</td>
</tr>
<tr>
<td>Dynamic MIMO Channel forecasting and robust precoding in the wireless systems 5G</td>
<td></td>
<td>Alexey Frolov</td>
<td></td>
</tr>
<tr>
<td>Multi-task Joint Coding: Explore Coding for 6G New Scenarios</td>
<td></td>
<td>Alexey Frolov</td>
<td></td>
</tr>
<tr>
<td>Complexity optimization for MIMO beam-domain SIC detection scheme for 5G uplink receiver</td>
<td></td>
<td>Andrey Ivanov</td>
<td>offline</td>
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</tbody>
</table>
Internet Of Things & Wireless Technologies

Development of the binocular display control board
Skoltech supervisor
Andrey Somov

Navigation system development
Skoltech supervisor
Gonzalo Ferrer

Development of the hardware-software complex «NeuroChat»
Skoltech supervisor
Andrzej Cichocki

Analysis of the domain adaptation problem from a frequency domain aspect
Skoltech supervisor
Dmitry Dylov

Formation of a reference model of competencies using machine learning algorithms
Skoltech supervisor
Grigoriy Kovalev

Efficiency research of error-correcting polar codes
Skoltech supervisor
Andrey Somov
Internet Of Things & Wireless Technologies

Signal processing for full duplex data transmission systems without time and frequency division

Skoltech supervisor
Andrey Somov

Deep learning of C++ transition code

Skoltech supervisor
Andrey Somov

Development of a model for segmentation and analysis of medical images of vasculature

* Interdisciplinary with DS

Skoltech supervisor
Alexey Frolov

Automatic annotation of EEG epileptic pattern for ALICE toolbox

Skoltech supervisor
Maxim Sharaev

Skoltech startup

Sk resident

Sk resident

Sk resident
Life Sciences (LS)

Students: 35
Companies: 19
Projects total: 28
Group projects: 6
Online projects: 1
Offline projects: 8
Hybrid projects: 19

1. Biomolecule
2. Biotech Campus
3. BostonGene
4. Cloning Facility
5. Crystera
6. Genetico
7. Genomed
8. Insilico
9. International Gymnasium of the Skolkovo Innovation Center
10. M&S decisions
11. MolTech
12. Motorica
13. MRM Proteomics R
14. OilGene
15. Open Longevity
16. SberMedAI
17. SoKo
18. Unim
19. Vibrant

Students: 35
Companies: 19
Projects total: 28
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Hybrid projects: 19

Industrial Immersion Coordinator

Vera Rybko
<table>
<thead>
<tr>
<th>Life Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical analysis of publications of the biomolecule resource and optimization of font styles, pictures and links</strong></td>
</tr>
<tr>
<td>Skoltech supervisor</td>
</tr>
<tr>
<td></td>
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<tr>
<td><strong>Thematic analysis of publications of the biomolecule resource and optimization of the sequence of presentation of the material</strong></td>
</tr>
<tr>
<td>Skoltech supervisor</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Review and analysis of biomedical research articles for building a company brand on Yandex.Q</strong></td>
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<tr>
<td>Skoltech supervisor</td>
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<tr>
<td></td>
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<tr>
<td><strong>Purification of ultra long genomic DNA from blood samples</strong></td>
</tr>
<tr>
<td>Skoltech supervisor</td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Dashboard development for the internal analytical system of the immunity analysis group</strong></td>
</tr>
<tr>
<td>Skoltech supervisor</td>
</tr>
<tr>
<td></td>
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<tr>
<td><strong>Implementation of scRNA-seq in precision oncology</strong></td>
</tr>
<tr>
<td>Skoltech supervisor</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
Designing web-application for registration of commercial kits measuring protein concentrations

Skoltech supervisor
Vera Rybko

Investigation of methods for improving the classification of imaginary movements by EEG patterns

Skoltech supervisor
Natalya Podsosonnaya

Implementation of bioinformatic approaches in defining functions of orphan proteins of human CYP4 family

Skoltech supervisor
Vera Rybko

Tools for repeat expansion detection and for variant effect prediction in intronic and regulatory regions of genes in WES and WGS data

Skoltech supervisor
Vera Rybko

Development of NGS-based test-system for Liquid Biopsy analysis

Skoltech supervisor
Vera Rybko

Implementation of multi-omics approach for the search and validation of molecular drug targets in pulmonary hypertension

Skoltech supervisor
Vera Rybko
<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Supervisor</th>
</tr>
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<tbody>
<tr>
<td>Comparison of the harmonization algorithms for single-cell RNA</td>
<td>Development of a classifier of genes according to the probability of a toxic effect during therapeutic exposure</td>
<td>Vera Rybko</td>
</tr>
<tr>
<td>sequencing transcriptomes using big data</td>
<td></td>
<td>hybrid</td>
</tr>
<tr>
<td>Development of “Science and Art” program</td>
<td></td>
<td>hybrid</td>
</tr>
<tr>
<td>Clinical pharmacology: investigation of different parametric</td>
<td>Applying generalized additive models (GAM) to analyze non-linear longitudinal data on cancer biomarkers to support decision making in oncology</td>
<td>Vera Rybko</td>
</tr>
<tr>
<td>time-to-event models for PFS and OS assessment in cancer</td>
<td></td>
<td>hybrid</td>
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<tr>
<td>Application of neural networks for optimization of drug candidates</td>
<td></td>
<td>hybrid</td>
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Skoltech supervisor

Vera Rybko

hybrid
## Life Sciences

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Supervisor</th>
<th>Type</th>
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<tbody>
<tr>
<td><strong>SUPER Motorica</strong></td>
<td>Development of optical haptic interface for arm prosthetics</td>
<td>Natalya Podsosonnaya</td>
<td>offline</td>
</tr>
<tr>
<td><strong>OilGene</strong></td>
<td>Search for resistance genes to sunflower broomrape</td>
<td>Vera Rybko</td>
<td>hybrid</td>
</tr>
<tr>
<td><strong>MRM Proteomics R</strong></td>
<td>Synthesis of proteotypic peptide standards and kit development for quantitative next-generation MS-based proteomics assays</td>
<td>Vera Rybko</td>
<td>offline</td>
</tr>
<tr>
<td><strong>MRM Proteomics R</strong></td>
<td>Construction, adaptation and visualization of the gene-disease association</td>
<td>Vera Rybko</td>
<td>hybrid</td>
</tr>
<tr>
<td><strong>OilGene</strong></td>
<td>The development of mobile systems (ring isothermal PCR) for diagnosing the resistance of sunflower plants to broomrape</td>
<td>Vera Rybko</td>
<td>hybrid</td>
</tr>
<tr>
<td><strong>OPEN LONGEVITY</strong></td>
<td>Molecular orbital analysis of anti-glycation agents for QSAR applications</td>
<td>Vera Rybko</td>
<td>hybrid</td>
</tr>
</tbody>
</table>
Development of the AI-algorithm for recognition of pathologies in mammary glands

Skoltech supervisor
Vera Rybko
hybrid

Analysis of phenotypic data of soybean varieties and search for single-nucleotide polymorphisms by economically valuable traits

Skoltech supervisor
Vera Rybko
hybrid

World biopsy market research: growth, trends, existing problems in biopsy

Skoltech supervisor
Vera Rybko
hybrid

Investigation of methods for improving the classification of imaginary movements by EEG patterns

Skoltech supervisor
Natalya Podsosonnaya
hybrid
Materials Science (MS)

Students: 14
Companies: 12
Projects total: 13
Group projects: 1
Online projects: 0
Offline projects: 3
Hybrid projects: 10

1. Biomimetix
2. Core Technologies
3. Cryptochemistry
4. FlexLab
5. IPG
6. Kintech Lab
7. M-Granat (RQC Spin-off)
8. Nissan
9. Novaprint 3D
10. NPP Impulse
11. OZON
12. Rustor
Materials Science

Research of mechanical properties of biomaterials

Skoltech supervisor
Alexey Salimon
hybrid

Investigation of crystal hypomorphism by structure prediction

Skoltech supervisor
Artem Oganov
hybrid

Computer simulation of the structure of clusters formed on a substrate

Skoltech supervisor
Artem Oganov
hybrid

Production of mixed oxides with a given crystallinity

Skoltech supervisor
Dmitry Krasnikov
offline

Optimization of hybrid perovskite photodetectors for pulse oximetry devices

Skoltech supervisor
Dmitry Krasnikov
offline

Theoretical and practical determination of the properties of the LiNa5Mo9O30 structure

Skoltech supervisor
Artem Oganov
offline

Cryptochemistry

Production of mixed oxides with a given crystallinity

Skoltech supervisor
Dmitry Krasnikov
offline
Materials Science

First-principle modeling of materials for LEDs
Skoltech supervisor
Sergey Levchenko

Investigation of magnetic properties of colloidal structures
Skoltech supervisor
Gleb Sukhorukov

Development of Cost- and Energy-Efficient Methods for Recovering Lithium and Electrolyte from Waste Batteries
Skoltech supervisor
Roman Kapaev

Determining the response of CNT-based sensors to a thermosetting resin
Skoltech supervisor
Dmitry Krasnikov

Research of various metal powders for 3D printing of components in manufacturing
Skoltech supervisor
Marina Tepliakova

Investigation of the prospects for the use of machine learning in the development of methods and techniques for the production of medicines
Skoltech supervisor
Dmitry Aksenov
Development of a hydrothermal synthesis method using microwave radiation to obtain cathode materials based on Ni-enriched NMC with a "core-shell" structure for lithium-ion batteries

Skoltech supervisor
Aleksandra Savina
# Petroleum Engineering (PE)

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Students</td>
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<td>Companies</td>
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<td>Online projects</td>
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<td>Hybrid projects</td>
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</tbody>
</table>

1. *Company name is protected by NDA*
2. Digital Petroleum
3. Gazpromneft STC
4. Gazpromneft
   Technological
   Partnerships
5. LabAdvance
6. Novosibirsk R&T Centre (NNTC)
7. Sakhalin Energy
8. South Geotherm SPE

**Industrial Immersion Coordinator**

Alexey Cheremisin

[Student, Group Project, Interdisciplinary Group Project]
### Petroleum Engineering

#### Research of membranes for gas separation
- Skoltech supervisor: Evgeny Chuvilin
- Type: hybrid

#### Graph-based temporal process planning and scheduling for well drilling operations
- Skoltech supervisor: Dmitri Koroteev
- Type: offline

#### Efficiency analysis of reservoir flow modeling acceleration
- Skoltech supervisor: Dmitri Koroteev
- Type: offline

#### Investigation of the possibilities of non-invasive acceleration of petroleum simulators
- Skoltech supervisor: Dmitri Koroteev
- Type: offline

#### Petroleum Data Processing and Lithofacies Prediction
- Skoltech supervisor: Dmitri Koroteev
- Type: offline

#### Screening of Surfactant Compositions Using Microfluidic Technology
- Skoltech supervisor: Alexey Cheremisin
- Type: hybrid

---

*Company name is protected by NDA*
Review and evaluation of the effectiveness of combined EOR with CO2

Skoltech supervisor
Alexey Cheremisin
offline

Optimization of the technology of thermochemical treatment based on data on the kinetics of transformation of organic matter in rocks of the Bazhenov formation during the injection of supercritical water

Skoltech supervisor
Mikhail Spasennykh
offline

The studies of microfluidic technology for the rapid screening of enhanced oil recovery methods

Skoltech supervisor
Alexey Cheremisin
offline

Selection of hydraulic fracturing fluid using microfluidic technology

Skoltech supervisor
Alexey Cheremisin
offline

Interpretation of CPP 3D data for the purpose of studying the structure of hydrocarbon deposits in unconventional reservoirs

Skoltech supervisor
Alexei Tchistiakov
offline

Microfluidic studies of salinity water injection for enhanced oil recovery

Skoltech supervisor
Alexei Tchistiakov
offline
Petroleum Engineering

Development of numerical methods for predicting hydrocarbon production based on historical data and proxy models of reservoir fluid movement

Skoltech supervisor
Alexander Cheremisin

Well data aggregation and preparation of the well history for offshore oil platform "Molikpaq" PA-A

Skoltech supervisor
Dmitriy Potapenko

Collection of data related to the emission and absorption of greenhouse gases
Development of a system for collecting and storing data retrieved from the carbon polygon

Skoltech supervisor
Alexander Bernstein
Photonics and Quantum Materials (PQM)

<table>
<thead>
<tr>
<th>Students</th>
<th>22</th>
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<tbody>
<tr>
<td>Companies</td>
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<td>Projects total</td>
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<tr>
<td>Group projects</td>
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<td>Online projects</td>
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<td>Offline projects</td>
<td>16</td>
</tr>
<tr>
<td>Hybrid projects</td>
<td>5</td>
</tr>
</tbody>
</table>

1. *Company name is protected by NDA*
2. Bioimaging
3. Cryptochemistry
4. FlexLab
5. IPG
6. Novaprint 3D
7. Russian Quantum Centre (RQC)
8. PhisTech
10. Qrate
11. TetraQuant
12. Tirphotonics
13. Troitsk Engineering Center

Industrial Immersion Coordinator

Dmitry Krasnikov

Students Number

Group Project

Interdisciplinary Group Project
Photonics and Quantum Materials

Testing and verification of fiber optic measurements interpretation algorithms
Skoltech supervisor
Dmitry Krasnikov

BIOIMAGING
Optimization of methods of multispectral imaging and computer vision for the analysis of pathological skin areas
Skoltech supervisor
Dmitry Gorin

Cryptochemistry
Recognition and processing of experimental analysis of chemical code
Skoltech supervisor
Dmitry Krasnikov

Mixed halide perovskites as Energy harvesters for Indoor photovoltaics and their optimization
Skoltech supervisor
Dmitry Krasnikov

Theoretical and practical determination of the properties of the BPO4 structure
Skoltech supervisor
Dmitry Krasnikov

Recognition and processing of experimental analysis of chemical code
Skoltech supervisor
Dmitry Gorin

Prototyping of a new laser scheme with ultrashort UPL pulses
Skoltech supervisor
Arkady Shipulin
Photonics and Quantum Materials

**IPG IRE-Polus**

Разработка системы детектирования наличия волоконного инструмента приборов FiberLase U

Skoltech supervisor
Arkady Shipulin
offline

**NovaPrint 3D**

Investigation of the features of the formation of "microplastics" from composite materials used for 3D printing

Skoltech supervisor
Dmitry Krasnikov
hybrid

**RQC Russian Quantum Center**

Investigation of diode-laser self-injection locking to the eigenmode of integrated microring resonator

Skoltech supervisor
Dmitry Krasnikov
offline

**picstech**

Development of components for a tunable laser and modulator on InP chip

Skoltech supervisor
Arkady Shipulin
offline

**Evaluation of the reproducibility of the characteristics of multi-sensor chips in the analysis of the smell of food-grade plastic**

Skoltech supervisor
Fedor Fedorov
hybrid

**Coupling experiment and simulation for optimization of acousto-optic devices within the AOM-1030-10-PM project**

Skoltech supervisor
Arkady Shipulin
offline

**Development of components for a tunable laser and modulator on InP chip**

Skoltech supervisor
Arkady Shipulin
offline
Photonics and Quantum Materials

**Improvement of digital models for fiber lenses to optimize the input of optical radiation from semiconductor lasers**

Skoltech supervisor
Dmitry Krasnikov

**Proofreading and adaptation of a set of laboratory works for the scientific and educational complex of quantum key distribution**

Skoltech supervisor
Yuriy Gladush

**Development of technology for the formation of core-shell structures containing quantum dots**

Skoltech supervisor
Dmitry Gorin

**Optimization of edge coupling of light into photonic integrated circuits with carbon nanotube films**

Skoltech supervisor
Yuriy Gladush

**Development of immunomagnetic particles based on nano- and submicron particles for specific isolation of biomarkers**

Skoltech supervisor
Dmitry Krasnikov
Photonics and Quantum Materials

Tuning photonic Integrated circuits with microfluidic channel

Skoltech supervisor
Vasiliy Chernyshev
offline

Development of broadband transitions for terahertz waveguides of various configurations

Skoltech supervisor
Dmitry Krasnikov
offline

Study of the features for the operation of new models of plasma sources for broadband radiation

Skoltech supervisor
Dmitry Krasnikov
offline
Space and Engineering Systems (SES)

- Students: 20
- Companies: 14
- Projects total: 15
- Group projects: 4*
- Online projects: 0
- Offline projects: 9
- Hybrid projects: 6

1. *Company name is protected by NDA
2. Integrant
3. Intelligent Ideas
4. Knowledge Genesis
5. Kosima
6. KosmoLab
7. Matrix Wave
8. Navigine
9. Plan-S Satellite and Space Technologies
10. Samsung
11. Sberbank
12. Tsuru Robotics
13. Space Technology and Services Centre
14. Yandex

Industrial Immersion Coordinator
Antonina Gromyko

* Including 1 interdisciplinary project with IoTWT
## Space and Engineering Systems

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of a UAV with a landing platform and testing in a physical simulator</td>
<td>Dmitry Tsetserukou</td>
</tr>
<tr>
<td>Developing methods for planning the group UAV flight for autonomous seismic exploration</td>
<td>Dmitry Tsetserukou</td>
</tr>
<tr>
<td>Research and development of algorithms and software components of driverless car control system</td>
<td>Dmitry Tsetserukou</td>
</tr>
<tr>
<td>Enhancing personnel development platform in VR</td>
<td>Dmitry Tsetserukou</td>
</tr>
<tr>
<td>Improvement of digital models for fiber lenses to optimize the input of optical radiation from semiconductor lasers</td>
<td>Anton Ivanov</td>
</tr>
<tr>
<td>Development of the prototype for electromyograph</td>
<td>Mikhail Lebedev</td>
</tr>
<tr>
<td>Development of conceptual framework for cubesat deployer</td>
<td>Anton Ivanov</td>
</tr>
</tbody>
</table>

*Interdisciplinary with IoTWT*
Space and Engineering Systems

Software defined W-band Satellite constellations
Skoltech supervisor
Anton Ivanov

Development of Automated robot navigation system in urban environments
Skoltech supervisor
Gonzalo Ferrer

Connecta IoT Constellation
Skoltech supervisor
Anton Ivanov

Study and Implementation of RGBD key point learning
Skoltech supervisor
Gonzalo Ferrer

Trajectory planning system for a mobile sidewalk robot with wheel slippage
Skoltech supervisor
Lev Rapoport

Python implementation of supplemental tools integrated into a Blender Add-on
Skoltech supervisor
Dmitry Tsetserukou
Space and Engineering Systems

Modernization of graffiti-drone navigation and spraying systems

Skoltech supervisor
Dmitry Tsetserukou
Offline

Development of algorithms for assessing tree amount based on laser scanning and aerial photography data

Skoltech supervisor
Anton Ivanov
Hybrid

Development of computer vision for warehouse robot
Development of load gripper and movement system for mobile robot
Study of algorithms of warehouse robotic swarm

Skoltech supervisor
Dmitry Tsetserukou
Offline
Contacts

Zhanna Turubarova
Head of Industrial Studies
+7 (916) 288-37-88
z.turubarova@skoltech.ru

Victoria Brighton
Industrial Studies program Specialist
+7 (982) 928-14-90
v.aleshina@skoltech.ru

internships@skoltech.ru