

## Research Interests

Machine Learning, Geometric Learning, Representation Learning for Graphs and 3D data, and its applications in scientific domains, e.g., Biology and Chemistry.

## Education

- 2020 - **Université Grenoble Alpes, Grenoble, France**,  
Present Master of Science in Industrial and Applied Mathematics (2nd year).
- 2019 - **Moscow Institute of Physics and Technology, Moscow, Russia**,  
Present Master of Science in Informatics and Computer Engineering.  
Advisor: Prof. Vadim Strijov.  
Thesis: Graph neural networks for model protein quality assessment.
- 2015 - 2019 **Moscow Institute of Physics and Technology, Moscow, Russia**,  
Bachelor of Science in Applied Mathematics and Physics, GPA: 4.53/5.  
Thesis: Application of multi-armed bandits in Yandex.Radio.

## Research Experience

- Nov 2019 - **Graduate Research Intern, Inria, Nano-D Team, Grenoble, France**.  
May 2020 Advisor: Prof. Sergei Grudinin  
○ Created methods VoroCNN and Spherical Graph Convolutional Network (S-GCN) for the protein model quality assessment problem.
- Feb 2018 - **Undergraduate Research Project, MIPT, Moscow, Russia**.  
May 2018 ○ Built a hybrid model with SVM and linear regression components for predicting the type of conformation and the value of binding energy of protein-ligand complexes

## Publications

- [1] **Ilia Igashov**, Nikita Pavlichenko, Sergei Grudinin. "Spherical convolutions on molecular graphs for protein model quality assessment". *In revision at Machine Learning: Science and Technology*. 2020. arXiv: 2011.07980.
- [2] **Ilia Igashov**, Kliment Olechnovič, Maria Kadukova, Česlovas Venclovas, Sergei Grudinin. "VoroCNN: Deep convolutional neural network built on 3D Voronoi tessellation of protein structures". *In revision at Bioinformatics*. 2020. bioRxiv doi: 2020.04.27.063586.

## Professional Experience

- Apr 2020 - **Leader of Data Science Team, PeakData, Remote**.  
Present ○ NLP startup in healthcare domain aimed to gather and process information on medical topics.
- Sep 2018 - **Software Developer, Yandex.Music, Recommendation Team, Moscow, Russia**.  
Oct 2019 ○ Launched three smart playlists based on personal recommendation algorithms.  
○ Implemented Multi-Armed Bandits algorithm for optimal recommendation of radio stations for new users.  
○ Created personal recommendations of podcasts and promotions.
- July 2017 - **Summer Intern, Intel, Nizhny Novgorod, Russia**.  
Aug 2017 ○ Implemented and integrated additional split criteria in Decision Tree algorithm for Intel DAAL.

## Teaching & Mentorship

- Feb 2020 - **Academic course "My first scientific paper" at MIPT, Mentor.**
- May 2020
  - Supervised a MIPT student in research project on spherical convolutions for molecular graphs.
- July 2019 - **Sberbank Machine Learning Course, Moscow, Lecturer.**
- Aug 2019
  - Taught introductory Python and Machine Learning courses for Sberbank employees.

## Projects & Activities

- December 2020 **Critical Assessment of protein Structure Prediction: CASP14 Conference, Poster session.**
  - Posters with VoroCNN and S-GCN
- May 2020 - **Critical Assessment of protein Structure Prediction: CASP14 Challenge, Participant.**
  - Aug 2020
    - S-GCN is in the top-1 by MCC(40) on CAD-score and in the top-5 by AUC on CAD-score
    - VoroCNN is in the top-2 by MCC(40) on CAD-score and in the top-7 by AUC on CAD-score
- Apr 2020 - **Critical Assessment of protein Structure Prediction: COVID-19, Participant.**
  - May 2020
    - 2 variations of VoroCNN participated in CASP\_Commons, COVID-19.
- Dec 2019 **Tsukuba University - UGA Computer Science Workshop, Grenoble, Speaker.**
  - Report "Graph convolutional networks in Structural Biology".
- Oct 2018 **Vk Hackathon, Saint Petersburg, Participant.**
  - Created an Android application for recognition composers on wall posters (Moscow Philharmonia project).
- Feb 2018 - **DeepPavlov, Contributor.**
- May 2018
  - Took part in building an active-learning process for training a model for NER in Russian language.

## Technical Skills

- Programming Python, C/C++, Java, SQL
- Frameworks PyTorch, TensorFlow, Keras
- Utilities Git, Docker, Jupyter, Postgres, MySQL, MongoDB
- Language English (TOEFL iBT: 106), French (A2), Russian (Native)