

# Alim Bukharaev

## Curriculum Vitae

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## Work Experience

- 2020–2021 **Junior Research Engineer**, Intelligent Radiological Assistance Laboratories.
- 2020–2021 **Technician**, Center for Neurobiology and Brain Restoration, The Skolkovo Institute of Science and Technology.

## Education

- 2021–Present **MSc in Industrial and Applied Mathematics**, ENSIMAG, Université Grenoble Alpes, second year student.
- 2017–2021 **BSc in Applied Mathematics and Physics**, Chair of Information Transmission Problems and Data Analysis, Phystech School of Applied Mathematics and Informatics, Moscow Institute of Physics and Technology. Graduated with honours, GPA 4.8/5.

## Scholarships

- 2021–2022 French Gouvernement Scholarship for master's students (BGF)
- 2019–2020 Increased State Academic Scholarship Award for achievements in educational activity
- 2018–2019 Phystech Foundation Scholarship Award for top-ranked students of MIPT

## Computer Skills

**Programming** Python, C/C++, SQL

**Libraries** pytorch, keras, numpy, scipy, pandas, matplotlib, tensorflow, opencv, flask





**Tools** Jupyter Notebook, git, ssh, PyCharm, Docker, SGE, TMUX, L<sup>A</sup>T<sub>E</sub>X

## Publications

- Neuroscience and Medical Data Analysis **Adapting Probabilistic U-Net for Midline Shift Detection** IITP RAS (*the lab*)  
In co-authorship and under supervision of Junior Researcher Maxim Pisov and Dr. Mikhail Belyaev  
Published as part of the ITaS'19 conference (*the paper, the conference, poster & code*);  
**Abstract:** PROBABILISTIC U-NET IS A NOVEL DEEP-LEARNING APPROACH FOR AMBIGUOUS IMAGE SEGMENTATION TASKS, PROPOSED BY KOHL ET AL. IN THIS PAPER, WE ADAPT IT TO A TOTALLY DIFFERENT PROBLEM - MIDLINE SHIFT DETECTION, WHICH CONSISTS IN DRAWING THE CURVE THAT SEPARATES THE BRAIN HEMISPHERES ON A GIVEN MRI SCAN. WE COMPARE THE PROBABILISTIC U-NET WITH A PLAIN U-NET AND EVALUATE ITS ABILITY TO LEARN A MEANINGFUL LATENT SPACE

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## Projects

- Medical Data Analysis **Vertebral Fracture Detection** IITP RAS & IRA labs & Skoltech | March 2020 - August 2021  
The goal of the project is to develop software capable of timely detection and estimation of potential osteoporosis-related vertebral compression fractures on CT-scans. The preprint on the achieved results is just about to be published.
- Medical Data Analysis **Pulmonary Hypertension** IRA labs | January 2021 - August 2021  
The project is dedicated to automatic diagnosis of pulmonary hypertension (CT-scans).
- Deep Learning **Neuro-Ear**  As part of MIPT 6th semester CS and Optimization courses | *poster*  
A *website* featuring a neural network capable of distinguishing musical instruments by sound was written. Try it out at <https://neuro-ear-project.an.r.appspot.com/classify> ! Please note that the address is up to a change. Check the **neuro-ear**  repo for updates
- CVision **Testing Pixellink**  Laboratory of Hybrid Intelligent Systems, MIPT | February-April 2019  
The goal of the project was to study how well a novel image-segmentation algorithm Pixellink  works in collaboration with some text-reading models





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## Coursework

- Mathematics Statistics, Probability Theory, Stochastic Processes, Optimization Methods, Computational Mathematics, Calculus (I, II, III, IV), TFCV, Functional Analysis, Linear and Abstract Algebra, Algorithms and Models of Computation, Discrete Analysis
- Computer Science Python Programming, Deep Learning (specialization by deeplearning.ai) *see certificates*, Hardware/Software Interface, Operating Systems (GNU/Linux), OOP (C/C++), Parallel Programming, experience of working with the DICOM format, GPU Computing (ongoing)

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## Other Projects and Homeworks

- Data Science **Breast Cancer**  As part of MIPT 7th semester Machine Learning course  
Various ML techniques were tested on the Breast Cancer Wisconsin dataset
- Data Science **Spectral Analysis**  Supervisor Junior Researcher Artem Borzov, IITP RAS  
*Spectral Clustering Algorithm* (according to Ng, Jordan and Weiss) was implemented on the Yahoo music dataset and compared with other clustering algorithms (*repo: MIPT-IITP*)
- C/C++ **Bash emulator**  A part of MIPT 3rd semester CS course  
An emulator of the GNU Bash was written on C++
- C **PDP-11 emulator**  A part of MIPT 2nd semester CS course  
An emulator of the PDP-11 16-bit minicomputer was written on C

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## Hobbies & Interests

Playing the guitar, English and Russian literature in the original, languages in general

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## Languages

English (Fluent, IELTS Academic 8.0), French (B1), Russian and Volga Tatar (Native)  
An electronic version of this CV with all working hyperlinks is available at <https://github.com/alimbfromlimb/CV>