Alim Bukharaev

Curriculum Vitae

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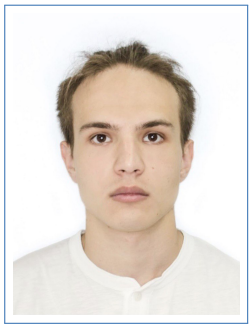

Work Experience

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 Gouvernment 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, LaTeX

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

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-scancs. 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, WAV — **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

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 cerificates*, Hardware/Software Interface, Operating Systems (GNU/Linux), OOP (C/C++), Parallel Programming, experience of working with the DICOM format, GPU Computing (ongoing)

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 emulater 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

Hobbies & Interests

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

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*