# Ignatii Dubyshkin | CV

📱 +7 916 295 2363 • ✉ i.dubyshkin@gmail.com • DeadAt0m

An engineer who looks for inspiration in human brain.

## Experience

**Samsung R&D Institute Russia** **Moscow, Russia**
*Biometric Algorithm Lab*

***Project Leader*** ***April 2020–Present***
**Lead the team of 6 engineers for improvement of Face Recognition algorithmic pipeline:**

- Responsible for development of Deep Metric Learning based part of pipeline: Adapted modern architectures and approaches that more than twicely boost the algorithm performance.
- Optimizing algorithms and models for work on mobile platforms secure enviroment: fitted to 2 Mb RAM and performed less than half-second on 1 ARM CPU Core.
- Created and maintain an inner Pytorch library which helps to share the articles and ideas implementations for research between our laboratory.
- Managing development of Image Enhancement algorithms for Face Recognition pipeline.
- Designed the inner neural network accelerator (because the existing ones are not applicable for our environment), which speed up algorithm deploy processes up to 60%.
- Made contributions to the inner Pytorch library by implementing the open articles in my free time (some of them are availible at my Github ⬡: link1 and link2).

**Main achievement:**
Our algorithms were successfully commercialized in all modern Samsung Galaxy phones, including flagships (Fold, S*, Note*, A*), and provide a positive experience with Face Recognition for every Samsung Galaxy phone user around the world.

***Research Engineer*** ***January 2019–March 2020***
**Participated in development of experimental face verification pipeline based on Time-of-Flight cameras:**

- Developed a Landmark Detector (TensorFlow).
- Developed Deep Metric Learning based algorithms for obtaining efficient embeddings from face images (TensorFlow).
- Optimized existing algorithms: conceptual and architectural changes, pruning and quantization for further porting to secure enviroment (very computational restricted) on mobile devices.

**Participation in maintaining of Face Recognition algorithmic pipeline used in modern Samsung mobile devices:**

- Initiated the development and maintain of inner python framework (Pytorch-Lightning based) used for training Deep Metric Learning models, which makes more comfortable all further algorithms improvement for the team.
- Developed the inner dataset format and rules, which makes the work with dataset comfortable, unified and reproducible: from data acquisition and annotation to dataset manipulation during training.

**Maintaining the local computational cluster:**

- Deployed the JupyterHub with JupyterLab and MLflow, which makes cluster more user-friendly for research.
- Tranformed the JupyterLab to fully functional web IDE by selecting and setup of its extensions for team needs.

**Centre for Bioelectric Interfaces** **Moscow, Russia**
*Research laboratory, part of Higher School of Economics*

***Research Intern*** ***November 2017–October 2018***

- Searched, implemented and enhanced classical algorithms for preprocessing of EEG signal: ICA, wavelet based denoising, filter bank common spatial pattern.

***DevOps Engineer***
- Deployed and supported of a local computational cluster and cloud (x8 Nvidia 1080Ti) based on dockerized services: NextCloud, Jupyterhub, Collobora, MatterMost and complex built jupyter kernels.

- **Neurocentre, LTD** **Moscow, Russia**

  *A startup in the area of neuroscience dealing in biofeedback and biomonitoring*

  ***Research Engineer*** ***June 2017–June 2018***

  - Developed software for multichannel signal classification (deep learning based).
  - Searched and adapted new technological devices and models; analyzed their applicability for the business interests of the company.
  - Testing portable devices, ranging from heartbeat monitor to EEG and tDCS.

- **Institute of Higher Nervous Activity** **Moscow, Russia**

  *Neuroscience research institute, part of Russian Academy of Sciences*

  ***Research Intern*** ***June 2014–January 2016***

  - Produced and published a research titled "The Use of Machine Learning Methods for Identification of the Efficient Learning State in the Neurofeedback Paradigm".
  - Won and fulfilled a grant in a team of 8 for the work on a subject of "Neurocorrelates of sensor memory reactivation during sleep in the dynamics of long-term background correlations of electronic brain activity and auditory evoked potentials".

## Technical and Personal skills

- **Platforms:** Linux
- **Programming Languages:** Python (*upper-intermediate*), C++ (*intermediate*), C (*intermediate*);
  - **Python Stack**: PyTorch, Cython, OpenCV, TensorFlow, LMDB, Ignite, Pytorch-Lightning, Pandas, Scipy, MLflow;
  - **Basic ability** with: CUDA, Docker, Bash, JavaScript, C# and LaTeX, nginx;
- **Skills:** Digital Signal Processing, Deep Learning, Computer Vision, NeuroImaging, Biometric, Reinforcement Learning;
- **Languages:** Russian (*native*), English (*upper-intermediate*);

## Education

### Academic Qualifications

- **Higher School of Economics, Institute for Cognitive Neuroscience** **Moscow**

  *Master in Psychology, Cognitive Sciences* *2016–2018*

  - Report for Neuroadaptive Technology Conference, Berlin, 2017, on the subject of "Neurophysiological Correlates Of Efficient Learning In The Neurofeedback Paradigm".
  - Produced a research on the theme "Advanced Signal Processing and Machine Learning Techniques for Unraveling Relations Between Various Functional Brain Imaging Modalities."

- **Moscow Technical University of Communication and Computer Science** **Moscow**

  *Bachelor in Applied Mathematics (Honours)* *2012–2016*

  With focus on Digital Signal Processing, Probability Theory and Machine Learning.

  - Earned a scholarship of Huawei "For the achievements in the academic and professional areas" in 2015.

### Coursera (profile)

| | |
|---|---|
| **Deep Learning** (specialization - 5 courses; deeplearning.ai) | **Average Grade Achieved: 100.0%** |
| **Medical Neuroscience** (Duke University) | **Grade Achieved: 99.7%** |
| **Algorithmic Toolbox** (University of California San Diego & Higher School of Economics) | **Grade Achieved: 100.0%** |
| **Data Structures** (University of California San Diego & Higher School of Economics) | **Grade Achieved: 100.0%** |