# BORIS SHIROKIKH

**Data Scientist**

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## EXPERIENCE

### IITP RAS | Senior Data Scientist

May 2017 - Present  Moscow, Russia

**Developed and deployed DL based algorithm for brain tumor segmentation in Burdenko Gamma-Knife center:**

- Clinical effect $2.2$ times workflow speedup.
- Clinical effect delineation agreement increased $92\% \rightarrow 96.5\%$
- Publication as primary author https://arxiv.org/abs/1909.02799
- Algorithm Improved state-of-the-art solution for metastases segmentation: number of missed tumors decreased by $50\%$
- Algorithm Developed CNN model which operates under 4GB RAM and 4 threads CPU within 15 sec per case

Other projects:

- Mentoring a group of 2 researchers on medical image segmentation tasks and leading the development of DL based algorithms for clinical installation
- Developing DL tools lib: https://github.com/neuro-ml/deep_pipe
- 4th place at WMH Segmentation Challenge 2017 leading neuro.ml team

### CDISE, Skoltech | Deep Learning Engineer

Mar. 2018 - Jul. 2019  Moscow, Russia

Integrated DL algorithms into CoBrain production:

- Docker container CNN for White Matter Hyperintensity segmentation on brain MRI.
- Docker container Brain MRI preprocessing pipeline based on DL and CV methods.

Developed Sparse Group-Lasso Inductive Matrix Completion algorithm for recommendation systems:

- Python Library https://github.com/premolab/SGIMC/
- Preprint of research https://arxiv.org/abs/1804.10653

### CNBR, Skoltech | Deep Learning Engineer

Jul. 2019 - Present  Moscow, Russia

- Developing a CNN model for cancerous lymph nodes detection and segmentation on CT images

## TEACHING

### Skoltech | Teacher Assistant

Oct. 2019 - Jan. 2020  Moscow, Russia

MA030348, Introduction to Computer Vision

## PUBLICATIONS

**Russian Science Citation Index:**
4 published papers on DL research, 2 as primary author: [1], [2], [3], [4]
**Scopus / WoS:**
2 published papers on DL research and clinical evaluation, 1 as primary author: [5], [6]

## EDUCATION

### MS | Applied Math and Physics

**Moscow Institute of Physics and Technology**

2018 - Present

Thesis on improving the segmentation of differently sized lesions on 3D medical images.

### BS | Applied Math and Physics

**Moscow Institute of Physics and Technology**

2014 - 2018

Thesis on developing DL segmentation algorithms robust to medical data variability.

## SKILLS

**ML / DL**

NumPy  Pandas  Scikit-learn  SciPy  PyTorch  TF  Keras

Experienced with image processing, reinforcement learning, statistical learning, recommendation systems

**Programming / Tech**

Python  C++  C  SQL  Docker  Git  Linux  Bash

**Math**

- Calculus, Algebra, Linear Algebra
- Discrete Math, Networks
- Algorithms, Optimization
- Statistics

**Languages**

- English (fluent)
- Russian (native)

## OTHER

- Russian National Physics Olympiad awardee
- Different professional sports ratings in swimming and table tennis.