Zürich Switzerland

# Mikhail (Misha) Usvyatsov

aelphy.github.io

## Education

**Oct 2017 — Present** **ETHZ** **Zürich, Switzerland**

- **PhD** in tensor algebra application for learning on visual data

**Sep 2015 — Jul 2017** **MIPT - National Research University** **Moscow, Russia**

- **MSc** in Computer Science. GPA: 4.75 / 5.0
- Coursework: Linux Kernel Development, Windows Kernel Development

**Sep 2015 — Jun 2017** **Skoltech** **Moscow, Russia**

- **MSc** in Computer Science. GPA: 4.57 / 5.0
- Coursework: Numerical Linear Algebra, Bayesian Methods, Optimization Methods, Neural Networks, Machine Learning

**Sep 2014 — Jun 2015** **Innopolis University** **Kazan, Russia**

- **BSc** in Computer Science, 2015. GPA: 4.92 / 5.0

**Sep 2010 — Jul 2014** **Ural Federal University** **Yekaterinburg, Russia**

- **BSc** in Electrical Engineering, 2014. GPA: 4.96 / 5.0

## Awards

| | | |
|---|---|---|
| 2017 | Awarded | Diploma with honors, Moscow Institute of Physics and Technology |
| 2014 | Awarded | Diploma with honors, Ural Federal University |
| 2012 | Finalist | Russian Math Olympiad |
| 2011 | Finalist | Russian Math Olympiad |
| 2010 | Winner | Student Math Olympiad, Ural Federal University |

## Selected Publications

- **Usvyatsov M.**, Makarova A., Ballester-Ripoll R., Rakhuba M., Krause A., Schindler K. C-Pic Gradients: Learning Low-Rank Embeddings of Visual Data via Differentiable Cross-Approximation. ICCV, 2021
- Huang S., Gojcic Z., **Usvyatsov M.**, Wieser A., Schindler K. PREDATOR: Registration of 3D Point Clouds with Low Overlap. CVPR, 2021
- Huang S., **Usvyatsov M.**, Schindler K. Indoor Scene Recognition in 3D. IROS, 2020
- Hackel T., **Usvyatsov M.**, Galliani S., Wegner J.D., Schindler K. Inference, Learning and Attention Mechanisms that Exploit and Preserve Sparsity in Convolutional Networks. IJCV, 2020
- **Usvyatsov M.**, Schindler K. Visual recognition in the wild by sampling deep similarity functions. ICRA 2019
- Borisyak M., **Usvyatsov M.**, Mulhearn M., Shimmin C., Ustuzhanin A. Muon trigger for mobile phones. Journal of Physics: Conference Series, 2017

## Summer Schools & Hackhathons

| | | |
|---|---|---|
| Oct 2019 | **"Brainhack"**<br>Worked on classifying raw EEG data. Python, Pytorch. | **ETHZ** (Zürich, Switzerland) |
| Aug 2017 | **"Deep Bayes"**<br>Discussed Bayesian techniques in deep learning methods. | **HSE - National Research University** (Moscow, Russia) |
| Jul 2017 | **"Pre-doc summer school on learning systems"**<br>Discussed the basics of learning theory. | **ETHZ** (Zürich, Switzerland) |
| Jul 2016 | **"Mathematical methods for high-dimensional data analysis"**<br>Learned topological data analysis, sketching and streaming. | **Technical University of Munich** (Munich, Germany) |

## Employment

**Research Intern** — Google — **July — Oct 2021, online, Germany**

- Research Intern at Mobile Vision Group

**ML Intern** — **Apple** — **Apr — Aug 2020, Zürich, Switzerland**

- Research Intern at Special Projects Group

**Software Engineering Intern** — **ProtonMail** — **Jun — Aug 2017, online, Switzerland**

- Applied LSH for SPAM detection
- Developed emails import/export system

**Research Intern** — Yandex — **Jun 2016 — Jun 2017, Moscow, Russia**

Worked with **Prof. Andrey Ustyuzhanin** in close collaboration with CERN.

- Worked on muon tracks simulation with Generative Adversarial Networks
- Developed efficient architecture (50x to 30% FLOPS speedup, depending on the problem)

## Teaching

Teaching assistant of **Prof. Konrad Schindler**.

- Image Interpretation, Fall 2017, 2018, 2019, 2020, Zürich, Switzerland

Course instructor.

- Introduction to Deep Learning, May 2017, Yerevan, Armenia
- Introduction to Scientific Computing, Fall 2018, 2019, 2020, Zürich, Switzerland

Teaching assistant of **Prof. Stamatios Lefkimmiatis**.

- Signal and Image Processing, Feb — Apr 2017, Moscow, Russia

**Research Intern** — **Innopolis University** — **May 2015 – Jul 2015, Kazan, Russia**

Worked with **Prof. Evgeni Magid** at Intelligent Robotic Systems Lab.

- Applied preview-control algorithm for Stable Bipedal Locomotion problem

## Technical Skills

**Experienced:**

- Python • C/C++11 • Ruby • Go
- Libraries: pytorch • pybind11 • Open3D • OpenCV • Numpy/Scipy • Scikit-Learn • Pandas • Matplotlib • Tensorflow
- Development environment: Git • CMake • Bazel • Vim • Jupyter • VS Code • Visual Studio
- Other: Linux Kernel • PostgreSQL • Garmin SDK • LaTeX

**Familiar:**

- Matlab • Bash • R • JS • Wolfram • Assembly • PHP
- Libraries: Cuda • Caffe • Sympy • NLTK • CVXPY
- Other: Windows Kernel • QT • SWIG • SolidWorks

## Languages

- English - Advanced • Russian - Mother tongue • German - Basic