Samuel **Horváth**

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Education

King Abdullah University of Science & Technology	*Thuwal, Saudi Arabia*
PhD in Machine Learning and Optimization	*Jan. 2019 - Present*

- Supervised by Peter Richtarik

King Abdullah University of Science & Technology	*Thuwal, Saudi Arabia*
MSc in Statistics	*Aug. 2017 - Dec. 2018*

- Supervised by Peter Richtarik
- GPA: 3.82/4.00

Comenius University	*Bratislava, Slovakia*
B.S. in Financial Mathematics	*Sep. 2014 - Jun. 2017*

- GPA 4.00/4.00 # 1
- Thesis: Visualization of Portfolio Optimization with R Shiny
- `samuelhorvath.shinyapps.io/efficient_frontier_visualization/`

Honors & Awards

2018	**157th/4049**, IEEEXtreme 24-Hour Programming Competition 12.0 joint with Dmitry Kovalev	*Saudi Arabia*
2018	**The Best Poster 500 Euros Prize**, Data Science Summer School, awarded as one of two out of total 170 posters presented	*France*
2017	**131th/3350**, IEEEXtreme 24-Hour Programming Competition 11.0 joint with Konstantin Mishchenko	*Saudi Arabia*
2017	**KAUST Fellowship**, A generous fellowship provided for MSc/PhD students at KAUST	*Saudi Arabia*
2017	**Universities**, Accepted to MSc programmes at Imperial College London (Statistics), University College London (Data Science) and University of Edinburgh (Statistical Data Science)	*United Kingdom*
2017	**2nd place**, CFA Institute Research Challenge hosted by CFA Society Czech Republic	*Czech republic*
2017	**37th place** , Vojtech Jarnik International Mathematical Competition- Category II	*Czech republic*
2017	**Excellence Scholarship**, Scholarship for top 5% students at Comenius University	*Slovakia*
2016	**Third Prize**, 23rd International Mathematics Competition for university students	*Bulgaria*
2016	**36th place**, Vojtech Jarnik International Mathematical Competition- Category I	*Czech republic*
2016	**Excellence Scholarship**, Scholarship for top 5% students at Comenius University	*Slovakia*
2015	**Excellence Scholarship**, Scholarship for top 5% students at Comenius University	*Slovakia*
2014	**18th place**, Slovak national round of Mathematical Olympiad for high school students	*Slovakia*
2014	**1st place**, Region round of Mathematical Olympiad for high school students	*Slovakia*

Skills

Mathematics	Probability and Statistics, Calculus, Linear Algebra, Statistical Learning, Deep Learning
Programming	Python, PyTorch, MXNet, Tensorflow, Keras, Pandas, Julia, R, R Shiny, Matlab, VBA, SQL
Tools	MS Office, LaTeX, SQL Server, Tableau
Languages	Slovak C2, English C1, German A2

Extracurricular Courses and Activities

Reviewer

AISTATS 2020, ICML 2019, NIPS 2018, Optimization Methods and Software   *2018-2019*

Minisymposia organizer   *Berlin, Germany*

ICCOPT   *2019*

- together with Filip Hanzely, we organized a minisymposia on the topic Large-Scale Stochastic First-Order Optimization consisting of 6 talks.

Nanodegree mentor   *Online*

Udacity   *2019*

- I serve as a mentor providing 1 on 1 meetings, code and project reviews and extra seminars for the students enrolled in Deep Learning Nanodegree

Seminar Organizer   *KAUST, Saudi Arabia*

All Hands Meetings on Big Data Optimization   *2018*

- Organizer of a group seminar, gave 6 talks given the time period

Teaching Assistant   *KAUST, Saudi Arabia*

Special Topics in Data Science   *2018*

- I was teaching assistant for PhD level course, which covers a mathematically rigorous introduction to the field of big data optimization.

Enterpreunership program   *Saudi Arabia*

Cornell University   *2018*

- 7-days course covers the basic process of how to move from generating a new business idea to turning that idea into a real business
- taught by Cornell professors Chad Carlos, Wesley Sine, Thomas Kurz

Deep Learning Nanodegree   *Online*

Udacity   *2018*

- Topics covered: Keras and TensorFlow, convolutional and recurrent networks, deep reinforcement learning, and GANs
- taught by authorities such as Sebastian Thrun, Ian Goodfellow, and Andrew Trask

Divide and Conquer, Sorting and Searching, and Randomized Algorithms   *Online*

Coursera/Stanford University   *2018*

- taught by great CS Expert Tim Roughgarden
- Passed with Distinction (98% Grade)

Statistical Learning   *Online*

Stanford University   *2017*

- Topics covered: Linear Regression, Classification, Tree-based Methods, SVM, Unsupervised Learning
- Based on the book "An Introduction to Statistical learning, with Applications in R"
- Passed with Distinction (100% Grade)
- `https://verify.lagunita.stanford.edu/SOA/7e92a12167684ec7ba2fd1313b96fb5d/`

Machine Learning   *Online*

Coursera/Stanford University   *2017*

- Topics covered: Linear and Logistic Regression, Neural Networks, SVM, Unsupervised Learning, Recommend Systems, ...
- taught by Machine Learning Expert Andrew Ng
- Passed with Distinction (100% Grade)

Conferences

Amazon Research Days   *Berlin, Germany*

Amazon   *Oct. 2019*

- Amazon Conference to promote collaboration with academia.

EMEA Research Internship Colloquium   *Cambridge, United Kingdom*

Amazon   *Aug. 2019*

- Amazon Conference for all of its interns from EMEA region.
- I presented a poster about our work **Natural Compression for Distributed Deep Learning**.

ICCOPT

TU BERLIN
Aug. 2019

- International Conference on Continuous Optimization
- I organized Minisymposia and gave a talk about our work **Stochastic Distributed Learning with Gradient Quantization and Variance Reduction**.

ICML
Long Beach, USA

LONG BEACH CONVENTION CENTER
Jun. 2019

- Thirty-sixth International Conference on Machine Learning
- We had our **Nonconvex Variance Reduced Optimization with Arbitrary Sampling** accepted, which I presented as the 5 min talk as well as the poster

Deep Learning Boot Camp
Berkeley, USA

SIMONS INSTITUTE FOR THEORY AND COMPUTING
May 2019

- The Boot Camp is intended to acquaint program participants with the key themes of the program such as Generalization, Approximation Power, Adversarial Examples and Over-parametrized Neural Networks.

Data Science Summer School
Paris, France

ÉCOLE POLYTECHNIQUE
Jun. 2018

- The primary focus of the event is to provide a series of courses and practical sessions covering the latest advances in the field of data science
- speakers: Cédric VILLANI, Yann LECUN, Suvrit SRA, …
- I was presenting poster, which was awarded as **the Best Poster** with **500 Euros** cash prize as one of two out of total 170 posters presented

Optimization and Big Data
KAUST, Saudi Arabia

KAUST
Feb. 2018

- 4 days conference aimed at novel optimization algorithms and distributed systems capable of working in the Big Data setting

Applied Machine Learning Days
Lausanne, Switzerland

EPFL
Jan. 2018

- 2 days hands-on workshops on Machine Learning and 2 days conference with speakers such as Christopher Bishop from Microsoft Research

Publications

Natural Compression for Distributed Deep Learning

SAMUEL HORVÁTH, CHEN-YU HO, ĽUDOVÍT HORVÁTH, ATAL SAHU, MARCO CANINI, PETER RICHTÁRIK
May. 2019

- `https://arxiv.org/pdf/1905.10988.pdf`

Stochastic Distributed Learning with Gradient Quantization and Variance Reduction

SAMUEL HORVÁTH, DMITRY KOVALEV, KONSTANTIN MISHCHENKO, SEBASTIAN STICH, PETER RICHTÁRIK
Apr. 2019

- A poster based on the results of this paper won **the Best Poster** at Control, Information and Optimization Summer School in Voronovo, Moscow, presented by Dmitry Kovalev
- `https://arxiv.org/pdf/1904.05115.pdf`

Don't Jump Through Hoops and Remove Those Loops: SVRG and Katyusha are Better Without the Outer Loop

DMITRY KOVALEV, SAMUEL HORVÁTH, PETER RICHTÁRIK
Jan. 2019

- Proceedings of the 31st International Conference on Algorithmic Learning Theory, San Diego, California
- `https://arxiv.org/pdf/1901.08689.pdf`

Nonconvex Variance Reduced Optimization with Arbitrary Sampling

SAMUEL HORVÁTH, PETER RICHTÁRIK
Sep. 2018

- A poster based on the results of this paper won **the Best Poster** at Data Science Summer School in Paris, 2018
- Proceedings of the 36th International Conference on Machine Learning, Long Beach, California
- `http://proceedings.mlr.press/v97/horvath19a.html`

Internships and Research Visits

Amazon *Berlin, Germany*
APPLIED SCIENTIST INTERN *Summer 2019*
- Intern at AI Core Team with focus on Hyperparameters Optimization supervised by Cedric Archambeau and Matthias Seeger.

University of California, Berkeley *Berkeley, California*
VISITING PHD STUDENT *Spring 2019*
- Research visit of Prof. Michael I. Jordan. As the part of the visit, I attended Deep Learning Foundations Workshop in Simons Institute.

Exponea *Bratislava, Slovakia*
AI INTERN *Summer 2018*
- I joined Exponea as AI Intern for Summer 2018. I was an interns at their Recommendation Team, where I worked on Sorting and Ranking Project for personalized recommendation for e-commerce.

Hobbies

ALL KINDS OF SPORTS
- Football - used to play the regional league (over 200 matches), now just a hobby
- Fitness, Volleyball, Badminton