



Samuel Horváth

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Education

King Abdullah University of Science & Technology

PHD IN MACHINE LEARNING AND OPTIMIZATION

- Supervised by Peter Richtarik

Thuwal, Saudi Arabia

Jan. 2019 - Present

King Abdullah University of Science & Technology

MSc IN STATISTICS

- Supervised by Peter Richtarik
- GPA: 3.82/4.00

Thuwal, Saudi Arabia

Aug. 2017 - Dec. 2018

Comenius University

B.S. IN FINANCIAL MATHEMATICS

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

Bratislava, Slovakia

Sep. 2014 - Jun. 2017

Honors & Awards

2020	MLSS Acceptance , Machine Learning Summer School (MLSS) 2020, Tuebingen, Acceptance 180/1300+	Germany
2019	Top Reviewer Award , NeurIPS 2019	Canada
2019	Progress towards PhD rated as outstanding ,	Saudi Arabia
2018	157th/4049 , IEEEExtreme 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 , IEEEExtreme 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

Seminar co-organizer

Online

FEDERATED LEARNING

2020-

- together with Peter Richtarik, Virginia Smith, Aurelien Bellet and Dan Alistarh, we organize Federated Learning One World (FLOW) seminar, <https://sites.google.com/view/one-world-seminar-series-flow>

Volunteer

Online

ICML 2020

2020

Reviewer

ICML '20 '19, AISTATS '20, NEURIPS '20 '19 '18, OPTIMIZATION METHODS AND SOFTWARE

2018-

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

2019-2020

- 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.

Entrepreneurs 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/S0A/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

ALT 2020

San Diego, USA

CATAMARAN RESORT HOTEL

Feb. 2020

- The 31st International Conference on Algorithmic Learning Theory.
- I gave a 20 minutes talk about our accepted paper: **SVRG and Katyusha are Better Without the Outer Loop**.

KAUST - Tsinghua Workshop

Thuwal, Saudi Arabia

KAUST

Nov. 2019

- I presented a poster about our work **Natural Compression for Distributed Deep Learning**.

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

Berlin, Germany

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

Adaptivity of Stochastic Gradient Methods for Nonconvex Optimization

SAMUEL HORVÁTH, LIHUA LEI, PETER RICHTÁRIK, MICHAEL JORDAN

Feb. 2020

- <https://arxiv.org/pdf/2002.05359.pdf>

On Biased Compression for Distributed Learning

ALEKSANDR BEZNOSEKOV, SAMUEL HORVÁTH, PETER RICHTÁRIK, MHER SAFARYAN

Feb. 2020

- <https://arxiv.org/pdf/2002.12410.pdf>

Natural Compression for Distributed Deep Learning

SAMUEL HORVÁTH, CHEN-YU HO, LUDOVÍK 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 intern 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