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

2019	**NeurIPS 2019,** one of the top 50% highest-scoring reviewers	*Canada*
2019	**Progress towards PhD rated as outstanding,**	*Saudi Arabia*
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
ICML '20 '19, AISTATS '20, NIPS '19 '18, OPTIMIZATION METHODS AND SOFTWARE   *2018-2020*

Minisymposia organizer   *Berlin, Germany*
ICCOPT   *2019*
- Together with Filip Hanzely, we organized a mini-symposia on the topic of 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*
- The organizer of our 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, which 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

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   *KAUST, Saudi Arabia*
KAUST   *Nov. 2019*
- I presented a poster about our work **Natural Compression for Distributed Deep Learning**.

Amazon Research Days
AMAZON

Berlin, Germany

Oct. 2019

- Amazon Conference to promote collaboration with academia.

EMEA Research Internship Colloquium
AMAZON

Cambridge, United Kingdom

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

Berlin, Germany

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 CONVENTION CENTER

Long Beach, USA

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
SIMONS INSTITUTE FOR THEORY AND COMPUTING

Berkeley, USA

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-parameterized Neural Networks.

Data Science Summer School
ÉCOLE POLYTECHNIQUE

Paris, France

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

KAUST, Saudi Arabia

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
EPFL

Lausanne, Switzerland

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 I. JORDAN

Feb. 2020

- `https://arxiv.org/pdf/2002.05359.pdf`

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 part of the visit, I attended the 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 a 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