Dániel Szilágyi

Computer Science PhD student

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Education

2019–present **PhD**, *Theoretical Computer Science*, IRIF, Université de Paris.
Thesis topic: "Quantum Algorithms for Optimization and Machine Learning", supervised by Iordanis Kerenidis

2017–2019 **MSc**, *Theoretical Computer Science*, École Normale Supérieure de Lyon.
Thesis topic: "A Quantum Interior-Point Method for Second-Order Cone Programming", supervised by Iordanis Kerenidis

2014–2017 **BSc**, *Mathematics*, University of Primorska, Slovenia.
Thesis topic: "Computational Methods for Polypeptide Origami Design", supervised by Andrej Brodnik

2010–2014 **High School**, *Mathematics/Physics/Computer Science*, Gimnazija Jovan Jovanović Zmaj, Novi Sad, Serbia.
Final year project: "Some Applications of Group Theory"

Experience

2019 **Research internship**, IRIF, Université de Paris.
Internship topic: "A Quantum Interior-Point Method for Second-Order Cone Programming", supervised by Iordanis Kerenidis

2018 **Research internship**, LIP, École Normale Supérieure de Lyon.
Internship topic: "Algorithmic Aspects of Quantum Shannon Theory", supervised by Omar Fawzi

2016 **Data science internship**, Microsoft Development Center, Serbia.
Worked on modeling and forecasting SQL Server performance in the Azure Cloud

2015–present **Teaching assistant**, Petnica Science Center, Serbia.
Mentoring talented high school students doing year-long research projects

2015 **Teaching assistant**, Summer School of Science (S3), Croatia.
Mentored a team of 3 high school students for a Bluetooth indoor positioning science/engineering project

2015 **Student job**, University of Primorska, Slovenia.
Worked as the embedded hardware/software specialist on the government-funded project titled "Absorbtion of foreign substances in the sea"

Publications

Iordanis Kerenidis, Anupam Prakash, and Dániel Szilágyi. "Improved quantum algorithms for Linear Programming". In preparation. 2019.

Iordanis Kerenidis, Anupam Prakash, and Dániel Szilágyi. "Quantum algorithms for Second-Order Cone Programming and Support Vector Machines". In: *ArXiv e-prints* (2019). arXiv: 1908.06720.

Iordanis Kerenidis, Anupam Prakash, and Dániel Szilágyi. "Quantum Algorithms for Portfolio Optimization". In: *Proceedings of the 1st ACM Conference on Advances in Financial Technologies*. ACM. 2019, pp. 147–155. DOI: 10.1145/3318041.3355465.

Omar Fawzi, Johanna Seif, and Dániel Szilágyi. "Approximation algorithms for classical-quantum channel coding". In: *2019 IEEE International Symposium on Information Theory (ISIT)*. IEEE. 2019, pp. 2569–2573. DOI: 10.1109/ISIT.2019.8849617.

Andrej Brodnik et al. "Construction of orthogonal CC-sets". In: *Informatica* 43.1 (2019). DOI: 10.31449/inf.v43i1.2693.

Selected talks

2019 **Workshop**, *QUDATA meeting*, Bordeaux, France.
Talk title: "Quantum machine learning"

2019 **Workshop**, *3rd IRIF-IQC join workshop*, Waterloo, Canada.
Talk title: "Quantum algorithms for SOCP and SVM"

2019 **Workshop**, *2nd QuantAlgo workshop*, Amsterdam, Netherlands.
Talk title: "Quantum algorithms for SOCP and SVM"

Honors and awards

2017–2019 **Scholarship**, *Ampère Excellence Scholarship*.
Awarded to the best international students at ENS Lyon

2016 **Competition**, *NASA SpaceApps challenge*, Slovenia.
Won 2nd place as a team at the national round of a 48h data science hackathon

2015–2017 **Competition**, *University Programming Marathon*, Slovenia.
Three-times university champion at the national ACM ICPC qualifiers

2014–2017 **Scholarship**, *University of Primorska Excellence Scholarship*.
Awarded to the best students at the University

2013–2014 **Scholarship**, *"Energy of Knowledge" Scholarship*, Serbia.
Awarded to the most successful competition participants

2011–2014 **Award**, *Dositeja Award*, Serbia.
Awarded to the most successful competition participants

2010–2014 **Competition**, *Serbian national high school competitions*.
Successfully competed at the national level in mathematics, physics and computer science

Languages

Native Serbian, Hungarian

Fluent English, French, Slovene

Basic German, Russian

Skills

Proficient	C++, Python, Julia, LaTeX, optimization methods, quantum computing, classical data structures and algorithms, machine learning
Experienced	Teaching, MATLAB, Mathematica, Unix administration, Git
Skilled	C#, OCaml, probability, graph theory