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

2020–2022 **Teaching assistant**, UFR Informatique, Université de Paris.
Computer labs for Introduction to programming in Java (L1), Web development (L1) and Functional programming (L3)

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

Sander Gribling, Iordanis Kerenidis, and Dániel Szilágyi. *Improving quantum linear system solvers via a gradient descent perspective*. 2021. arXiv: 2109.04248 [quant-ph].

Iordanis Kerenidis, Anupam Prakash, and Dániel Szilágyi. "Quantum algorithms for Second-Order Cone Programming and Support Vector Machines". In: *Quantum* 5 (Apr. 2021), p. 427. ISSN: 2521-327X. DOI: 10.22331/q-2021-04-08-427. URL: https://doi.org/10.22331/q-2021-04-08-427.

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