

RUSTAM LATYPOV

Doctoral Candidate, Theoretical Computer Science

An ambitious problem solver with a strong work ethic. A quick independent learner and a well-versed team player. I strive for elegant solutions with great attention to detail.

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EDUCATION

- ▷ **Doctor of Science · Aalto University** June 2021 –
Theoretical Computer Science
- ▷ **Master of Science · Aalto University (GPA 4.9/5)** 2019 – 2021
Mathematics and Operations Research
Major: Applied Mathematics **Minor:** Computer Science
- ▷ **Bachelor of Science · Aalto University (GPA 4.9/5)** 2016 – 2019
Engineering Physics and Mathematics
Major: Mathematics and Systems Analysis **Minor:** Computer Science
- ▷ **Graduate · Oulun normaalikoulun lukio** (upper secondary school) 2011 – 2014

RESEARCH INTEREST

Graph theory, Graph algorithms, Distributed algorithms, Parallel programming, Spectral graph theory, Linear algebra, Optimization

WORK EXPERIENCE

- ▷ **Doctoral candidate · Aalto University** June 2021 –
Working on distributed computing and distributed algorithms, advised by Prof. Uitto.
- ▷ **Research assistant · Aalto University** Mar 2020 – May 2021
Worked on graph algorithms in the sublinear Massively Parallel Computation model of distributed computing under the supervision of Prof. Uitto.
- ▷ **Giant Leap Intern · Vaisala Oyj** Jun – Aug 2019
Applied machine learning methods to forecast test failures in large scale production. Performed data collection, feature engineering and model training (Python).
- ▷ **Research assistant · Aalto University** Jun – Aug 2018
Carried out an independent research project involving inverse problems under the supervision of Prof. Hannukainen. Studied a non-linear ill-posed inverse problem for resistor networks both symbolically and numerically (MATLAB).

▷ **Peacekeeper · Finnish Defence Force**

Jan – Aug 2017

Assisted local military, conducted patrols and weapon handling drills in the Middle East in the role of the company commander's signalist.

PUBLICATIONS/MANUSCRIPTS (authors ordered by surname, as is standard in the field)

- Sebastian Brandt, Rustam Latypov, Jara Uitto. *Brief Announcement: Memory Efficient Massively Parallel Algorithms for LCL Problems on Trees*. 2021. DISC'21.
- Rustam Latypov, Jara Uitto. *Deterministic 3-Coloring of Trees in the Sublinear MPC model*. 2021. Manuscript. [<https://arxiv.org/abs/2105.13980>]

REVIEWER

- International Conference on Principles of Distributed Systems (DISC'21)
- Conference On Principles Of Distributed Systems (OPODIS'20)

SOFTWARE PROJECTS — [github.com/rustamlatypov]

- ▷ **Parallel matrix multiplication** C++
Parallel (CPU) matrix multiplication using an optimized memory access pattern, SIMD operations and OpenMP. Benchmarked against a naive sequential implementation achieving significant speedup.
- ▷ **Tile-matching game** C++
Classic Tetris and Pentis with controls in accordance with the Super Rotation System, dynamic block distributions and falling speeds.
- ▷ **Parallel radix sort** Scala
Sequential and parallel (CPU) LSD radix sorts using Java's ForkJoinTask framework. Benchmarked against `scala.util.Sorting.quickSort` achieving significant speedup with both implementations.
- ▷ **Inverse problem for resistor networks** MATLAB
Solving non-linear, ill-posed inverse problems for resistor networks using only boundary measurements and grid topology both symbolically and numerically [aaltodoc.aalto.fi/handle/123456789/34075].
- ▷ **Machine learning classifier for music genres** Python
Solving a skewed multiclass music genre classification problem with supervised principal component analysis and support vector machines.
- ▷ **Parallel password cracker** Python
A command-line tool for cracking passwords in parallel (CPU) using dictionary and hybrid attacks.