Doctoral Researcher (PhD Student) in Practical Graph Algorithms for Bioinformatics Problems

Position description

We are looking to recruit one PhD Student (full-time employment, 4 years) for an ERC-funded project at the University of Helsinki.

The expected start date is **August – September 2025**, but here is some flexibility.

Ideally, the candidate has a strong **algorithmic and programming** background, and strong skills to **develop, implement, and test practical graph algorithms** that exploit features of the graphs arising from sequencing data in bioinformatics. The student is expected to take an active role in leading the project, working with the team members and international collaborators, and doing possible research visits abroad. This position is funded by a recent **ERC Consolidator Grant** on Scalable Graph Algorithms for Bioinformatics using Structure, Parameterization and Dynamic Updates.

The person will join the Graph Algorithms team, led by Assoc. Prof. Alexandru Tomescu, which is part of the wider Algorithmic Bioinformatics group at the University of Helsinki. The Graph Algorithms team currently consists of 2 PhD Students, 3 Postdocs and we regularly hire Research Assistants as summer interns or MSc students.

For some key pointers related to this position, see:
- Dias et al. Fast, Flexible, and Exact Minimum Flow Decompositions via ILP **RECOMB 2022**
- Schmidt et al. Matchtigs: minimum plain text representation of kmer sets, **Genome Biology 2023**
- Grigorjew et al. Accelerating ILP solvers for Minimum Flow Decompositions through search space and dimensionality reductions, **SEA 2024** (Runner-up to Best Paper Award)
- Sena and Tomescu, Safe Paths and Sequences for Scalable ILPs in RNA Transcript Assembly Problems, **arXiv 2024**

We are based at the Department of Computer Science, University of Helsinki, Finland, in a city that often ranks among the best places to live in the world. Despite being a capital, Helsinki is a very livable city, with lots of green areas, an efficient public transport system and a housing market rather accessible. Helsinki offers easy access to national parks or islands within the metropolitan area: **Nature lovers, this is the place to be!**

Candidates from a minority background in our field are warmly encouraged to apply!

Requirements

We require proven experience in implementing efficient code and strong (graph) algorithmic skills.

The following constitute a clear advantage:
- Proven experience in handling and analyzing large datasets (including genomic data).
- Previous research experience and publications.
- Achievements at international programming contests such as IOI or ACM ICPC.

Excellent written and oral communication skills in English are needed.
Applicants should have a MSc in computer science, bioinformatics or a related field.

The work involves research-related activities, including conducting theoretical and applied research, data analysis, writing research articles, participating in and presenting research at academic conferences, and teaching-related activities. You are also requested to do short stays abroad at our collaborators.

Applicants must obtain the doctoral student status in the Doctoral Programme in Computer Science at the University of Helsinki during the standard 6-month probationary period of this employment contract. Details about this process can be provided during a potential interview.

Salary and benefits

The position is full-time and funded for four years. For a doctoral student, the starting salary is around 2700 euros/month, depending on previous qualifications and experience (e.g. previous publications). The University of Helsinki offers comprehensive services to its employees, including occupational healthcare and health insurance, sports facilities, and opportunities for professional development. The International Staff Services office (https://www.helsinki.fi/en/about-us/careers/information-arriving-international-staff) assists employees from abroad with their transition to work and live in Finland.

How to apply

Apply via https://www.hiit.fi/ict-community-researcher-positions/ mentioning "Alexandru Tomescu" as recruiter. (Note that this application system is hosted by Aalto University; however, the position will be at the University of Helsinki.)

The application deadline is **March 2nd, 2025 at 11:59 PM** (23:59 UTC+02:00).

Additional information

For more information on the position, you are welcome to contact Alexandru Tomescu (alexandru.tomescu@helsinki.fi).

For more information on the Doctoral Programme in Computer Science (DoCS), please visit https://www.helsinki.fi/en/research/doctoral-education/doctoral-schools-and-programmes/doctoral-school-in-natural-sciences/doctoral-programme-in-computer-science.

For some reasons to move to Finland, see "**Finland among the best in the world**" http://www.stat.fi/tup/satavuotias-suomi/suomi-maailman-karjessa_en.html