

**2 postdoctoral position in the scientific project
“BOBR: Decomposition methods for discrete problems”
financed by the European Commission (grant agreement no 948057)
Principal Investigator: Michał Pilipczuk**

The ERC project „BOBR: Decomposition methods for discrete problems”, led by dr hab. Michał Pilipczuk, is offering up to two postdoctoral positions in the Institute of Informatics at the Faculty of Mathematics, Informatics and Mechanics of the University of Warsaw.

Terms of employment

Selected candidates will be employed as full-time researchers (*pol.* adiunkt). The duration of employment is for one year, with possible extension till March 2026. The starting date can be set between 1st October 2024 and 1st December 2024, up to an agreement between the candidate and the principal investigator. The offered salary combined (basic salary approx. 9 500 PLN gross/month plus project bonus) is around 12 000 PLN per month pre-tax (around 2 725 EUR), which is more than enough for a comfortable life in Warsaw. The position comes with no teaching obligations and travel budget. Selected candidate will work on one or more research directions studied within the project, described below.

Description of the project

Project BOBR focuses on studying graph decompositions and their applications in designing efficient algorithms, in particular for graph problems and problems originating from finite model theory. The work within the project concentrate on the following four directions:

- Beyond Sparsity. We study the abstract notions of sparsity in graphs (bounded expansion and nowhere denseness) in order to understand the structure implied by these notions and to use this structure for designing efficient algorithms. We also try to build a theory of well-structured dense graphs, based on advances in the theory of sparse graphs and inspired by the theory of stability.
- Dynamic parameterized data structures. We expand the theory of parametrized complexity by designing data structures for dynamic parameterized problems in graphs.
- Algorithms in planar graphs. We design new parameterized and approximation algorithms for problems in planar graphs, while focusing on combining techniques from both these areas.
- Algorithms in hereditary classes of graphs: We study structural properties in classes of graphs defined by forbidding induced subgraphs, in order to design efficient parameterized, approximation, and exact algorithms working on graphs from such classes.

Requirements

We expect that candidate at the moment of employment holds a PhD degree in either mathematics or computer science and has an excellent background in both of these disciplines, in particular in one or more of the following fields:

- structural graph theory;
- algorithm design;

- automata and logic.

Research experience in any of the following areas will be an advantage:

- parameterized algorithms;
- approximation schemes in planar graphs;
- algorithms on graph classes;
- dynamic data structures;
- model-checking algorithms;
- graph minors theory;
- model theory, in particular finite model theory or stability theory;
- structural theory of sparse graphs (notions of bounded expansion and nowhere denseness);
- decompositions of graphs, in particular treewidth and cliquewidth.

The competition may be entered by candidates who meet the conditions set out in art. 113 of the Law on Higher Education and Science of July 20, 2018 (Journal of Laws of 2023, item 742, as amended).

Applications

An application should include **Curriculum Vitae** that:

- presents an overview of the background and scientific achievements of the candidate;
- lists all the candidate's research works (including not yet published manuscripts);
- gives a list of three experienced researchers that may serve as references for the candidate.

In addition, there should be a **signed cover letter** addressed to the Dean of the Faculty of Mathematics, Informatics and Mechanics, University of Warsaw together with the **personal data clause** (attached).

No research statements are required.

On the day of submitting the application, the candidate does not have to hold a PhD degree.

Applications, as well as further questions on both the scientific topic of the project and formal details of the call procedure should be directed to dr hab. Michał Pilipczuk:

michal.pilipczuk@mimuw.edu.pl

In order to apply for the position, candidates should send an e-mail and submit the documents as attached .pdf files.

Application deadline: 17 June 2024

Applications which do not satisfy the above requirements or are submitted after the deadline will not be considered for the position.

The applications will be evaluated by a selection committee appointed by the Dean of the Faculty of Mathematics, Informatics and Mechanics, University of Warsaw. The committee may invite candidate to a meeting, which will be conducted remotely. The results of the competition will be sent to candidates electronically on 7 July 2024 at the latest. The competition is the first stage of the recruitment process as described in the Statute of the University of Warsaw, the recommendation by the selection committee being a basis for its subsequent stages.

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given and family name

Information on personal data processing

Controller

Controller of your personal data processed in connection with the recruitment process is the University of Warsaw, ul. Krakowskie Przedmieście 26/28, 00-927 Warszawa, as the Employer.

Contact with the controller:

- by traditional mail at: University of Warsaw, ul. Krakowskie Przedmieście 26/28, 00-927 Warszawa (name the organizational unit to which your letter is addressed);
- by phone: 22 55 20 355.

Data Protection Officer (DPO)

Controller has designated Data Protection Officer whom you may contact via email at iod@adm.uw.edu.pl. You may contact the DPO in all matters relating to your personal data processing by the University of Warsaw and the exercise of rights in relation to the processing of personal data.

The DPO, however, does not proceed other matters, like handling recruitment procedures, collecting recruitment documents, providing information on current recruitment process.

Purpose and legal grounds of data processing

Personal data of candidates for employment shall be processed for recruitment purposes only.

Your personal data shall be processed in the scope as indicated by employment law¹ (*given name (names) and family name, date of birth, contact information as provided, education, professional qualifications, previous employment*) for the purposes of this recruitment process², whereas other data³ shall be processed based on your consent which may take the following wording:

I agree to the processing of personal data provided in CV and other submitted documents by the University of Warsaw for realising my recruitment process.

If your documents include data as mentioned in Art. 9 section 1 of the GDPR (special categories of personal data), processing shall be possible upon your consent to processing such data⁴ which may take the following wording:

I agree to the processing of special categories of personal data, as mentioned in Art. 9 section 1 of the GDPR, provided in CV and other submitted documents) by the University of Warsaw for realising my recruitment process.

The University of Warsaw shall be also processing your personal data in future recruitment processes upon your consent⁵ which may take the following wording:

¹ Art. 22¹ of the law of June 26, 1974 Labour Code (i.e. Journal of Laws 2019 item 1040 with subsequent changes);

² Art. 6 section 1 letter b of the Regulation of the European Parliament and the Council (EU) 2016/679 of April 27, 2016 on protection of individual persons with regard to the personal data processing and on the free flow of such data, and also repealing Directive 95/46/EC (general regulation on data protection) (Official Journal EU L 119 of 04.05.2016, page 1, with subsequent changes) (hereinafter as the GDPR);

³ Art. 6 section 1 letter a of the GDPR;

⁴ Art. 9 section 2 letter a GDPR;

⁵ Art. 6 section 1 letter a GDPR;

I consent to processing of my personal data for the purposes of any future recruitment processes at the University of Warsaw for the period of the next nine months.

You may revoke all such consents at any time by, for example, sending an email at konkursy@mimuw.edu.pl.

Be advised that the revocation of your consent does not affect legal compliance of processing which had been completed upon consent before its revocation.⁶

Data retention period

Your personal data collected in this recruitment process shall be stored over the period of three months from the date the recruitment process is completed.

In case you agree to process your data in future recruitments, your data shall be used over the period of nine months.

Data recipients

Officers authorized by the Controller shall have access to your personal data, the processing of which is in the scope of their duties.

~~Recipients of personal data may be other subjects obligated by the Controller to provide specific services involving data processing, like~~

.....
(name all recipients of data)

Data transfer outside the European Economic Area (EEA)

Your personal data shall be disclosed to subjects authorized by law. Signing-in is through Google Forms. Your personal data may be also processed by our provider of G-Suit for education by Google Company in their data processing centres.⁷ Your data shall be protected under the standards of the Privacy Shield, accepted by the European Commission.⁸ This shall guarantee an adequate level of data security.

Rights of the data subject

Under the GDPR data subjects have the following rights:

- to access data and to receive copies of the actual data;
- to correct (rectify) your personal data;
- to restrict processing of personal data;
- to erase personal data, subject to provisions of Art. 17 section 3 of the GDPR;
- to file a claim with the President of the Personal Data Protection Office, if you believe data processing violates law.

Information on the requirement to provide data

Providing your personal data in the scope resulting from law is necessary to participate in the recruitment process. Providing other personal data is voluntary.

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place and date

.....
applicant's signature

⁶ Art. 7 section 3 GDPR;

⁷ <https://www.google.com/about/datacenters/inside/locations/index.html>

⁸ <https://www.privacyshield.gov>