

Alexandru Popa

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Current Position:

- Full Professor - University of Bucharest (since February 2020)
- Senior Researcher - National Research Institute for Research and Development in Informatics, Bucharest (since February 2017)

Education

- University of Bucharest - BSc (2008)
- University of Bristol - PhD (2011)

Short bio

Research interests: Alexandru Popa is an internationally recognized expert in the field of discrete optimization algorithms. He has a broad research experience both in theory and in practice. On the theoretical side he is an expert in approximation algorithms. On the practical side, he studied meta-heuristics for providing (sub-optimal but efficient) solutions for NP-hard problems. Also, Dr. Popa is an expert in using integer programming for modelling various NP-hard problems with practical applications.

Publication record: Although he is only 36 years old, Prof. Popa has published over 75 papers in prestigious journals (e.g., Mathematics of Computation, Algorithmica, Central European Journal

of Operations Research, Algorithmic Finance, Distributed Computing) and conferences (e.g. SODA, MFCS). For more details, please refer to his Google Scholar profile. It is worth noting his recent publication that has a very important practical application: *A novel algorithm for clearing financial obligations between companies - an application within the Romanian Ministry of Economy.*

International experience: Alexandru Popa has broad international experience and was affiliated with 5 universities in 5 different countries: Romania, Great Britain, Finland, Czech Republic and Kazakhstan. Moreover, he carried out many research visits to over 18 universities and research institutes all over the world (Israel, China, Austria, Germany, UK, Slovakia, France, India, Sweden, Denmark, Iceland). Moreover, he is the national coordinator of the European Research project COST CA 15210, "European Network for Collaboration on Kidney Exchange Programmes", which aims to solve algorithmic problems related to kidney transplants in Europe. The project has over 40 members (in over 20 countries) from various areas: medicine, law, computer science. Alexandru won several awards, the most recent being the third place at Rada Mihalcea prize for Young Researchers in Science and Technology. He was also awarded two DAAD fellowships to visit MPII Saarbrücken and University of Augsburg.

Community service: Alexandru Popa is an editor of The Computer Journal and a PC member of several conferences as IEEE SSCI, SOFSEM, IWOCA, SYNASC and a reviewer for project proposals for Netherlands Organisation for Scientific Research and National Research, Development and Innovation Office of Hungary and was a member of Board of Examiners for adjudicating the Ph.D. thesis of R.Senthil Amutha, Bharathiar University India, 2018

Student supervision: Alexandru Popa supervised 3 PhD students that graduated: Radu Mincu, Camelia Obreja and Ahmed Alsahlani. He currently supervises 2 PhD students in the final stages of their PhD. Another PhD student will join the group in the summer. His research group also consists of several other master and undergraduate students.

Description of the research group

The research group of the prospective advisor, Prof. Dr. Alexandru Popa consists of 3 PhD students (one of them will start the PhD in a couple of months), two Assistant Professors and several undergraduate students. Moreover, Prof. Popa has many collaborators at other universities.

To state it in one short sentence, the **main goal** of Alexandru's research is to understand and to provide algorithms for various NP-hard problems. Of course, this is a long term (possibly life long) goal and the methods for investigating this topic span both theory and practice: heuristics, integer programming, approximation algorithms, fixed parameter algorithms.

Description of the work carried out by the student

I am, in general, flexible with the topic that the visiting student chooses to investigate. The most important aspect is that the student chooses a subject that he/she finds motivating and that is in line with the guidance of his/her PhD advisor. Thus, I see the following options:

1. The visiting PhD student proposes his own research topic.
2. The visiting student decides to work with one of my PhD students on a research project. The research group of the advisor consists of a large number of students that investigate different research projects, and, therefore there are many available options. For example, the visiting student may work on the design of heuristic algorithms for finding the evolutionary distance between two genomes of different organisms by determining the minimum number of genome rearrangements needed to obtain one from the other.
3. Another option for the visiting student is to choose a project to work on independently. In the past I have studied several NP-hard problems from the theoretical perspective (approximation algorithms and fixed parameter algorithms) and the visiting student can develop metaheuristics for some of these problems. For example, some better algorithms can be designed for payment networks which are systems that allow the transfer of monetary value between any two participants in the network, often by using intermediary nodes.

Short presentation of University of Bucharest

The **University of Bucharest** is a public university founded on 4 July 1864 (156 years ago) by a decree of Prince Alexandru Ioan Cuza to convert the former Princely Academy into the current University of Bucharest, making it the second oldest modern Romanian university. It is one of the five members of the *Universitaria Consortium* (the group of elite Romanian universities).

See the International Office webpage of the University of Bucharest for more details:
<https://unibuc.ro/international/?lang=en>

Information about Bucharest

Known for its wide, tree-lined boulevards, glorious Belle Époque buildings and a reputation for high life (which in the 1900s earned its nickname of "Little Paris"), Bucharest, Romania's largest city and capital, is today a bustling metropolis. Population of 1,944,367 inhabitants is that Bucharest is the sixth city in population in the European Union. In fact, however, Bucharest gathers over three million people, and experts predict that over the next five years, the total will exceed four million. Add to this the fact that the settlements around the city, which will be part of the future metropolitan area population totals about 430,000 inhabitants.

Bucharest has reasonable connections with most European capitals and with the largest cities in Romania. The city is also reached by a large number of low-costs flights, mainly from destinations in Italy and Spain as well as from some major cities in Germany, France, the UK, Ireland, Belgium, Hungary, Turkey, Austria, Israel etc.

Bucharest has plenty of attractions and is in general a fun place to live in. Prices usually go anywhere from €5-7 to €30-40 for high-end dining for a single person menu consisting of a meal (most places offer €5-7 Euros menus that include an Entree, Main Dish and Dessert or a Drink) and a soft drink.

For more details about the city, do not hesitate to ask me, or visit:

<https://wikitravel.org/en/Bucharest>