







# NIKOLAOS ANTONIADIS

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 Nikolaos Antoniadis  
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## SUMMARY

I hold a PhD in Informatics from the University of Luxembourg (2021) and three peer-reviewed publications in stochastic combinatorial optimization and metaheuristics. My doctoral research addressed the resilience and reliability of smart grids under uncertainty, combining simulation and optimization methods. This work produced a variable neighborhood search simheuristic validated on real-world network data from Creos Luxembourg S.A., published in *International Transactions in Operational Research*. Earlier work examined multiobjective combinatorial optimization for smart grid overload prevention and a CPU-GPU parallel variable neighborhood search for inventory optimization. Across these projects, I personally implemented and experimentally validated algorithms in Java, Fortran, OpenMP, and OpenACC. I currently hold a permanent position in the Greek secondary education system, serving as the Head of the Department of Educational Affairs, and Deputy Director of the Secondary Education Directorate of Kastoria.

## RESEARCH INTERESTS

- **Stochastic combinatorial optimization** — optimization under uncertainty with simulation-based objective evaluation
- **Simheuristics** — integration of metaheuristic search with Monte Carlo simulation, including variance reduction techniques
- **Variable neighborhood search** — design, implementation, and experimental validation of VNS and its variants
- **Metaheuristics** — general-purpose and problem-specific heuristic algorithm development
- **Monte Carlo simulation methods** — control variates and antithetic variates for variance reduction
- **Parallel and GPU-accelerated metaheuristics** — CPU-GPU hybrid implementations using OpenMP and OpenACC
- **Smart grid reliability and resilience** — combinatorial optimization applied to power network reliability under uncertainty

## EDUCATION

Jan 2017 – May 2021

**PhD** in Informatics at University of Luxembourg, Luxembourg

Thesis: *Enhancing Smart Grid Resilience and Reliability by Using and Combining Simulation and Optimization Methods*

Supervisor: Professor Yves Le Traon, Interdisciplinary Center for Security, Reliability, and Trust (SnT)

- Sep 2014 – Jun 2016 **MSc** in Applied Informatics at the University of Macedonia, Greece, final grade **9.33** (*excellent*)  
Specialization in Computational Methods and Applications  
Thesis: *Parallelisation of a metaheuristic algorithm for complex inventory management and control problems: A computational study using OpenMP and OpenACC technologies*  
Supervisor: Professor Angelo Sifaleras, Department of Applied Informatics
- Sep 1990 – Nov 1995 **BSc** in Informatics Engineering, TEI of Athens, Greece, final grade **6.95** (*good*)  
Thesis: *Developing a Neural Network for Intrusion Detection*  
Supervisor: Professor Ekaterini Geourgouli, Department of Informatics

## RESEARCH EXPERIENCE

- Jan 2022 – Dec 2023 **Postdoctoral Researcher** in the *Computational Methodologies and Operations Research (CMOR) Lab* of the Department of Applied Informatics, University of Macedonia, Greece.
- Developing optimization algorithms for black-box problems.
- Jan 2017 – May 2021 **Doctoral Researcher** at the *Security Design and Validation Research Group (SerVal)* of the Interdisciplinary Center for Security, Reliability and Trust (SnT), University of Luxembourg, Luxembourg.
- Worked on the Self-Healing Smart Grids project in collaboration with Creos Luxembourg S.A.

## TEACHING EXPERIENCE

### FURTHER EDUCATION

- Oct 2022 – Feb 2023 FE Lecturer, IEK Kastorias, Greece.
- Course *Programming in Java*
- Feb 2022 – Jun 2022 FE Lecturer, IEK Kastorias, Greece.
- Course *Programming in C++*
- Oct 2021 – Feb 2022 FE Lecturer, IEK Kastorias, Greece.
- Course *Programming in C*
  - Course *Introduction to Informatics*
- May 2004 – Sep 2004 FE Lecturer, KEK MIT SA, Greece.
- Course *Software applications in sales – Internet*
  - Course *Design and management of Databases*
- Mar 2004 – Jun 2004 FE Lecturer, Delta Singular Education, Greece.
- Course *Computer components and architecture*
  - Course *Computer programming*
  - Course *Installation and management of a web server*
  - Course *Internet architecture*

Dec 2003 — Mar 2004 FE Lecturer, KEK MIT SA, Greece.

- Course *Telecommunications and Internet services*

Feb 2003 — May 2003 FE Lecturer, Kastoria ICT Training Committee, Greece.

- Course *Training teachers in ICT*

Feb 2000 – Jun 2000 FE Lecturer, IEK Kastorias, Greece.

- Course *Data communications and networks*

## SECONDARY EDUCATION

Jul 2005 – Present Head of the Department of Educational Affairs & Deputy Director, Secondary Education Directorate of Kastoria prefecture, Ministry of Education, Greece.

- Registration, transfer, attendance, and evaluation of students affairs
- Implementation of analytical programs and teaching methods
- Vocational education, laboratory equipment and operation of Laboratory Centers
- The division of classes into sections
- Special education affairs, the approval of home teaching
- The implementation of remedial teaching programs
- Additional teaching support and the operation of Tutoring Departments,
- Hygiene and safety in school units affairs
- Operation of student communities affairs
- The conduct of student competitions
- The supervision of vocational guidance programs, school activities, and innovative actions, and the activity of the corresponding decentralized structures of responsibility of the Secondary Education Directorate of Kastoria prefecture
- Operation of School Libraries affairs
- The approval of the school units schedules under the responsibility of the Secondary Education Directorate of Kastoria prefecture
- The determination of the region of registration of students in the school units (spatial distribution)
- The recording of vacancies and surpluses of teaching staff in the school units under the responsibility of the Secondary Education Directorate of Kastoria prefecture
- The handling of any other relevant matter

Jul 2023 – July 2025 Principal of Argos Orestiko Lyceum, Secondary Education Directorate of Kastoria prefecture, Ministry of Education, Greece.

- Teaching Informatics
- Ensuring that academic policies and curriculum are followed
- Developing and tracking benchmarks for measuring school success

- Helping teachers maximize their teaching potential
- Meeting and listening to concerns of students on a regular basis
- Encourage, guide, and assist student leaders and teachers
- Meetings with parents and administrators on a regular basis for problem resolution
- Meetings with the psychologist and the social worker on a weekly basis for problem resolution
- Developing discipline when necessary
- Providing an inclusive atmosphere free of bias in which students can achieve their maximum potential

Jun 2021 – Jun 2023 ICT teacher, Secondary Education Directorate of Kastoria prefecture, Ministry of Education, Greece.

- Teach in vocational upper secondary school.
- Offer secretarial support at school and IT support in computer labs.

Sep 1999 – Dec 2020 ICT teacher, Secondary Education Directorate of Kastoria prefecture, Ministry of Education, Greece.

- Taught in several vocational and general secondary schools in Kastoria prefecture.
- He was the head of the Computer Laboratory in schools.
- Providing secretarial support at school and IT support in computer laboratories.
- Between September 2004 to June 2009, posted in Germany (taught in secondary schools at Düsseldorf, Köln, and Wuppertal) living in Düsseldorf.

Nov 1998 – Jun 1999 ICT teacher (*full-time, temporary*), 1st Secondary Education Directorate of Athens prefecture, Ministry of Education, Greece.

- Taught in the 1st Technical Lyceum of Athens (vocational upper secondary school).

## PUBLICATIONS

### ARTICLES IN PEER-REVIEWED INTERNATIONAL JOURNALS

2021 **Antoniadis, N.**, Cordy, M., Sifaleras, A. and Le Traon, Y., *A variable neighborhood search simheuristic algorithm for reliability optimization of smart grids under uncertainty*. Intl. Trans. in Op. Res., 29: 2172-2200. DOI: [10.1111/itor.13070](https://doi.org/10.1111/itor.13070)

2017 **Antoniadis N.** and Sifaleras A., *A hybrid CPU-GPU parallelization scheme of variable neighborhood search for inventory optimization problems*, Electronic Notes in Discrete Mathematics, Elsevier B.V., Vol. 58, pp. 47-54. DOI: [10.1016/j.endm.2017.03.007](https://doi.org/10.1016/j.endm.2017.03.007)

### CHAPTERS IN PEER-REVIEWED BOOKS

2020 **Antoniadis N.**, Cordy M., Sifaleras A., and Le Traon Y., *Preventing overloading incidents on smart grids: A multiobjective combinatorial optimization approach*, in B. Dorransoro, P. Ruiz, J.C. de la Torre, D. Urda, and E.G. Talbi (Eds.), Optimization and Learning (OLA 2020), Springer Communications in Computer and Information Science, Vol. 1173, pp. 269–281. DOI: [10.1007/978-3-030-41913-4\\_22](https://doi.org/10.1007/978-3-030-41913-4_22)

## THESES

- 2021 **Antoniadis N.**, *Enhancing Smart Grid Resilience and Reliability by Using and Combining Simulation and Optimization Methods*, PhD thesis, University of Luxembourg, Luxembourg. [\[PDF\]](#)
- 2016 **Antoniadis N.**, *Parallilopoiisi methevretikou algorithmou gia ta problimata diacheirisis apothematon: mia ypologistiki meleti me OpenMP kai OpenACC (Greek) [Parallelisation of a metaheuristic algorithm for complex inventory management and control problems: A computational study using OpenMP and OpenACC technologies]*, MSc thesis, University of Macedonia, Greece. [\[PDF\]](#)

## INVITED TALKS

- 2022 *Smart Grid Optimization Modeling and Solution Methods* (Along with Assoc. Prof. Angelo Sifaleras)  
Laboratory of Algorithms and Technologies for Network Analysis, Nizhny Novgorod, Russia (virtual attendance).

## CONFERENCE TALKS

- 2020 *Preventing overloading incidents on smart grids: A multiobjective combinatorial optimization approach*  
International Conference on Optimization and Learning (OLA2020), Cadiz, Spain.

## PROFESSIONAL ASSOCIATIONS

- Association of Computer Machinery (ACM) member since February 2019
- Member of the Hellenic Association of IT Teachers in Secondary Education since 2011

## OTHER QUALIFICATIONS & SEMINARS

- 2024 *Certificate of attendance*, Organization and Management of Education, University of Patras, Patra, Greece.
- 2018 *Certificate of attendance*, Metaheuristics Summer School - MESS 2018, University of Catania, Acireale-Sicily, Italy.
- 2017 *Certificate of attendance*, Resource-aware machine learning - 4th International Summer School 2017, TU Dortmund University, Dortmund, Germany.
- 2013 *Adult Education Certification*, National Centre for Public Administration & Local Government, Greece.
- 1999 *Certification of teaching and teaching competence*, School of Pedagogical and Technological Education, Greece.

## OTHER PROFESSIONAL EXPERIENCE

- Sep 1997 – Oct 1998 Senior software developer, Intrasoft Intl. SA, Athens, Greece.
- Was lead programmer on both Protocol and Registry subsystems of TAXIS (Taxation Informatics System) project in collaboration with the Greek Ministry of Finance, using ORACLE DBMS, C/C++

- Jun 1997 – Aug 1997    Software developer, Profile Software, Athens, Greece.
- Developed software for stock market consultants using Visual Basic
- Nov 1995 – May 1997    Private (Technical Corps), Hellenic Army, Greece.
- Military service (compulsory for Greek citizens)
- Aug 1994 — Oct 1995    Software developer, Soft & Hard Ltd., Athens, Greece.
- Developed software for travel agencies using COBOL
- Sep 1993 – Jul 1994    Software developer, Olympic Air, Athens, Greece.
- Developed software for the Directorate of Management Services that analyzes employees' data using Dbase III+

## LANGUAGES

- Greek (native)
- English (fluent)
- German (basic)

## TECHNICAL SKILLS

- **Programming languages:** C/C++, Java, Python, Fortran, Julia
- **Parallel/GPU computing APIs:** OpenMP, OpenACC, MPI, and CUDA
- **Developer Tools:** JetBrains IntelliJ IDEA, CLion, Eclipse, Visual Studio Code
- **Optimisation Software:** Gurobi optimizer

## REFERENCES

Please contact me for a full list of referees.