

Konstantinos (Kostis) Karathanasis

Computer Engineering and Informatics (CEID), University of Patras, Greece

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SUMMARY

A Computer Engineering and Informatics graduate from the University of Patras with a solid background in applications and foundations of computer science, specializing in algorithm design and analysis, and data structures. Highly skilled in full-stack software development, with proficiency in multiple programming languages and frameworks.

SKILLS

Programming Languages: C, C++, Java, Python, PHP, JavaScript, C#, SQL, NetLogo

Web Technologies: HTML, CSS, JavaScript, NodeJS, PHP, Wordpress

Databases: MySQL, MongoDB

Data Processing and Analysis: Apache Spark, PySpark

Optimization and Mathematical Modeling: Gurobi, CPLEX, SCIP

Development Tools: Git, Visual Studio, Visual Studio Code, PyCharm, IntelliJ

Languages: English (Cambridge English Proficiency), Greek (native), French (DELF B2)

EDUCATION

PhD Student, Computer Engineering and Informatics 2025-

University of Patras, School of Engineering. *Supervisors:* Prof. Christos Zaroliagis and Prof. Spyros Kontogiannis.

Integrated Master of Engineering, Computer Engineering and Informatics (Grade: Excellent 8.78/10) 2019-2024

University of Patras, School of Engineering (5-year program)

MEng Thesis: Efficient filtering of non-dominated solutions in Decision Making Systems (Grade: 10/10) 2023-2024

Abstract: This thesis presents efficient algorithms for filtering non-dominated solutions in multi-criteria optimization problems. In these problems, there is usually not a single optimal solution, but rather a set of solutions that can be exponentially large. The objective is to compute the subset of solutions where no solution is better in all criteria than another solution. This filtering process is a common component in many decision-making systems, and therefore, its efficiency is of great importance. Initially, modern algorithms for filtering non-dominated solutions proposed in recent literature are presented, both for the case of two criteria and for the more general case of multiple criteria. Subsequently, two new algorithms developed within the scope of this thesis for problems with more than two criteria are introduced. Finally, an extensive experimental evaluation is conducted, comparing the new algorithms with the already known ones from recent literature.

Supervisors: Prof. Christos Zaroliagis and Prof. Spyros Kontogiannis.

PROJECTS

Nexora (Server Management Website) Summer 2025

Web app for managing servers (collect data, statistics, specs, user management). *Tools used:* Python, SQLite, HTML, CSS, JS

Hotel Management Dashboard Summer 2025

Tools used: Python, SQLite Flet

Object Detection Winter 2024

Vessel detection and recognition using machine learning algorithms. *Tools used:* Python, YOLO, Torch

Algorithm Engineering Project (Grade: 10/10) Summer 2023

Implementation in C++ using LEDA, BGL and experimental evaluation of well-known algorithms. *Tools used:* C++, LEDA, Boost.

Range Queries using Multi-dimensional Data Structures (Grade: 10/10) Winter 2023

Implementation and experimental evaluation of k-d trees, Quad trees, Range Trees and R-Trees. *Tools used:* Python, C++

Communication and Coordination models for Distributed Systems (Grade: 10/10) Winter 2023

Implementation of different communication and coordination protocols for distributed computing. *Tools used:* Python.

Lookup and Range Queries in DHTs (Distributed Hash Tables) (Grade: 10/10) Winter 2023

Implementation of DHTs Chord and Pastry and experimental evaluation. *Tools used:* Python, RabbitMQ Server.

Nash Equilibria in Bimatrix Games (Algorithmic Game Theory Project) (Grade 10/10) Summer 2023

Implementation and evaluation of algorithms for approximate Nash equilibria in Bimatrix games. *Tools used:* Python.

End-to-end environmental sensing utilizing physical wireless sensor network (Grade 10/10) Summer 2023

Tools used: Contiki OS, C, Grafana, MySQL, Python, Pandas, Keras, Jupyter

Local Odysseys: A web tourist guide for the city of Patras (Grade 10/10). Summer 2023

Tools used: PHP, JavaScript, HTML, CSS, MySQL, Leaflet, JSON

Implementation of a lexical and a syntax analyzer using Flex and Bison (Grade 10/10) Summer 2022

Implementation of the lexical and syntax analyzer as parts of a compiler for a given language. *Tools used:* Flex, Bison, JSON

TVondemand: An application for renting movies and TV shows (Grade 10/10) Summer 2021

Tools used: Java, MySQL

TEACHING (As a teaching assistant)

- **Algorithm Engineering:** lab lectures, lab exercises, grading assignments and exams. CEID, Summer Term 2024, 2025
- **Algorithms and Combinatorial Optimization:** grading assignments and exams. CEID, Winter Term 2024, 2025
- **Introduction to Algorithms:** grading exams. CEID, Winter Term 2024, 2025
- **Algorithmic Techniques for Data Science:** grading assignments. CEID, Summer Term 2025

RESEARCH EXPERIENCE

Researcher at [ICELab](#), University of Patras, under prof. Christos Zaroliagis and prof. Spyros Kontogiannis Mar 2024-present

Topics: algorithm engineering, combinatorial optimization, multi-objective optimization, data structures, resource allocation, object detection with machine learning algorithms.

Research team member for the EU research project [AMBITIOUS](#).

Mar 2024-present

Topics: Multi-objective optimization, vehicle routing, object detection, resource allocation.

PUBLICATIONS

- K. Karathanasis, S. Kontogiannis, and C. Zaroliagis.
[Task Orchestration in the Cloud Continuum via Multi-objective Evolutionary Algorithms.](#)
In *Algorithmic Aspects of Cloud Computing*
Lecture Notes in Computer Science (Springer 2025), to appear.
- K. Karathanasis, S. Kontogiannis, A. Pegos, V. Sofianos, and C. Zaroliagis.
[VRP-inspired Techniques for Discrete Dynamic Berth Allocation and Scheduling.](#)
In *Algorithmic Approaches for Transportation Modeling, Optimization, and Systems - ATMOS 2025.*
OASlcs Series (2025), to appear.
- K. Karathanasis, S. Kontogiannis, and C. Zaroliagis.
[Improved Dominance Filtering for Unions and Minkowski Sums of Pareto Sets.](#)
In *Algorithms* - ESA 2025.
LIPIcs Series Vol.351 (2025), to appear.
- K. Karathanasis, S. Kontogiannis, and C. Zaroliagis.
[Optimizing Task Orchestration across the Cloud Continuum.](#)
In *Artificial Intelligence Applications and Innovations - AIAI 2025.*
IFIP Advances in Information and Communication Technology, vol 753. Springer, Cham.

INTERESTS

Music (playing electric and acoustic guitars, bass and keyboards, and composing), sports, movies, books.