Merkouris Papamichail Computer Scientist

csd.uoc.gr/~merkourisp/ • mercoyris@ics.forth.gr • https://github.com/merkouris148
Athens, Greece

About

I am a Phd student at the CSD, UoC, and a Graduate Research Assistant at the ICS, FORTH. My studies focused primarily on the theory and mathematics of CS. Currently, I am working on formal methods for NN *verification*, *adversarial robustness* and *explainability*. In my research, I apply methods from Computational Optimization, Computational Logic, Linear Programming, Affine Geometry, and other fields. My goal is to bring the rigor of traditional algorithmic theory to modern ML methods.

Education

2022 – Present **UOC** – Heraklion, Greece
PhD in Computer Science.

2020 – 2022 **NKUA, NTUA** – Athens, Greece
MSc in Algorithms, Logic and Discrete Mathematics, *GPA: 9.13*.

2014 – 2020 **NKUA** – Athens, Greece
BSc in Computer Science, *GPA: 7.67*

PhD Comprehensive Exams

2023 **Inductive Logic Programming:**
Area Presentation & Future Research Directions
Advisor: Dr. Giorgos Flouris & prof. Dimitris Pleksousakis.
The submitted report is available here.
The presentation is available here.

MSc Thesis

2021 – 2022 **Sorting & Selection Problems in Partially Ordered Sets**
Advisor: prof. Stavros Kolliopoulos.
permalink: https://pergamos.lib.uoa.gr/uoa/dl/object/3232651
"Pergamos" repository.
The presentation of the Master's Thesis is available here.

BSc Thesis

2020 **Introduction to Matroid Theory**
Advisor: prof. Stavros Kolliopoulos.
permalink: https://pergamos.lib.uoa.gr/uoa/dl/object/2925849
"Pergamos" repository.

A reader-friendly version of this resume is available here.

Publications

2025 **Adaptation Procedure in misinformation games**
K. Varsos, M.Papamichail, G. Flouris, M. Bitsaki – AAMAS 2025
https://link.springer.com/article/10.1007/s10458-025-09704-w.

2022 **Implementating the Adaptation Procedure in Misinformation Games**
M.Papamichail, K. Varsos, G. Flouris – SETN 2022
https://dl.acm.org/doi/10.1145/3549737.3549781.

Internship

2021 – 2022 **Graduate Research Assistant**
Institute of Computer Science, FORTH
Heraklion, Greece
Implementating the Adaptation Procedure in Misinformation Games. implementation was written mainly in Python. We also utilized the Answer Set Programming Language Clingo, and the software package for computation of Nash equilibria Gambit. We also implemented a parallel algorithm, achieving the optimal parallelization; thus improving on our first algorithm. The source code is available here.

Teaching Assistanship

Fall 2024 **Knowledge Representation & Reasoning** (Graduate Course)

Fall 2025 **Theory of Computation** (Undergraduate Course)

Fall 2024 **Logic** (Undergraduate Course)

Fall 2023, 2024 **Complex Network Dynamics** (Adv. Undergraduate Course)
The slides of a short tutorial in Game Theory are available here (in Greek).

Spring 2022, 2023 **Algorithms and Complexity** (Undergraduate Course)
The slides of the tutorials are available here (in Greek).

Membership

2022 – **Hellenic Society of Artificial Intelligence**
In 2022 I was accepted as a member of the Hellenic Society of Artificial Intelligence.

Programming Languages

Imperative Programming: C++, Python.

Scientific Computations: Octave, Matlab.

Declarative Programming: Clingo, Prolog, Haskell, Ocaml.

Operating Systems: Linux.

Markdown Languages: LaTeX.

Selected Presentations and Reports

Fall 2023 **Kolmogorov Complexity**

For the master's course on Information Theory. A presentation of Kolmogorov work on *algorithmic information.* The presentation is available The presentation and report are available here.

Fall 2022 **Four-Color Theorem: A problem that remained open for over a century**

For the master's course on Technical Writing in English. A simplified presentation of the classical computer science result, the Four-Color Theorem due to K. Appel and W. Hanken. The presentation is available here.

Spring 2021 **Parametrized Two-Player Nash Equilibrium**

For master's course on Parametrized Algorithms and Complexity. Presentation of Danny Hemerlin et al. paper *"Parametrized Two-Player Nash Equilibrium"*, 2011. The presentation and report are available here.

Spring 2021 **On the Parametrized Complexity of Red-Blue Points Separation**

For master's course on Parametrized Algorithms and Complexity. Presentation of Édouard Bonnet et al. paper *"On the Parametrized Complexity of Red-Blue Points Separation*, 2017. The presentation and report are available here.

Fall 2021 **Non-monotone Submodular Maximization under Matroid and Knapsack Constraints**

For the master's course on Approximate Algorithms. Presentation of Jon Lee's, et al. paper *"Non-monotone Submodular Maximization unde Matroid and Knapsack Constraints"*, 2009. The presentation and report are available here.

Spring 2020 **On the Maximal Number of Disjoint Circuits of a Graph**

For the master's course on Algorithmic Grapth Theory. Presentation of P. Erdös and L. Pösa paper *"On the Maximal Number of Disjoint Circuits of a Graph"*, 1961. The presentation and report are available here (in Greek).

Fall 2020 **Approximation Algorithms for Orienteering and Discounted-reward TSP**

For the master's course on Combinatorial optimazation. Presentation of the paper of Avrium Blum's et al. on *"Approximation Algorithms for Orienteering and Discounted-reward TSP"*, 2003. Comparison with the paper of Samir Khuller et al. on *"Analyzing the Optimal Neighbohood: Algorithms for Partial and Budget Connected Dominating Set Problems"*, 2019. The presentation and report are available here (in Greek).

Fall 2020 **Amortized Analysis**

For the master's advanced course on Algorithms & Complexity. A presentation of the elementary notions of Amortized Analysis. The presentation is available here (in Greek).

Fall 2018 **Colourful Caratheodory Theorem**

For the bachelor's course on Computational Geometry. Presentation of the papers *"Computational Aspects of the Colorful Caratheodory Theorem"*, by Wolfrang Mulzer, et al., 2015, and the paper *"Colorful Linear Programming and its Relatives"*, by Impre Barany et al., 1997. The presentation and report are available here (in Greek).

Selected Programming Projects

Fall 2022 **Lambda Calculus Type Checker & Interpreter in OCaml**
For the postgraduate course on Types and Programming Languages, of Computer Science Department, University of Crete. The source code is available here.

Fall 2021 **Algorithms' implementations in C++**
For the master's advanced course on Algorithms & Complexity. The project's code and documentation is available here.

Spring 2020 **NMR-structure prediction in Matlab/Octave**
For the master's course on Algorithms in Structural Bioinformatics. A protein structure prediction based on previous work by I. Emiris and G. Nikitopoulos on *"Molecular Conformation Search by Distance Matrix Pertubation"*, 2003. Our contribution was based on closed scource code, so it is available for the reviewer, after contacting the author of this resume. The report of the above project is available here.

Fall 2019 **Constraint problems in ECLiPSe Prolog**
For the bachelor's course on Logic Programming. The project's code and documentation is available here.

Spring 2018 **Bank simulation in C++**
For the bachelor's course on System Programming. A bank simulation that handles bitcoin transactions. A project about data structures implementation in C++. The project's code and documentation is available here.

Spring 2018 **P2P interprocess comunication in C++**
For the bachelor's course on System Programming. A project about inter-process communication in Linux OS. The project's code and documentation is available here.

Spring 2018 **Dropbox-like application in C++**
For the bachelor's course on System Programming. A project about multi-threading and network sockets in Linux OS. The project's code and documentation is available here.

Fall 2018 **Bitcoin recommendation system in C++**
For the bachelor's course on Software Development for Algorithmic Problems. Bitcoin recommendation system, on real-life twitter data. A project about Clustering, Sentiment Analysis and Local Sensitive Hashing. The project's code and documentation is available here.

Spring 2017 **Classifiers in Matlab/Octave**
For the bachelor's course on Machine Learning. Implementation of k-Near Neighbours, Euclidean and Naive Bayesian Classifiers. The project's code and documentation is available here.

Fall 2017 **Game solver in Haskell**
For the bachelor's course on Principles of Programming Languages. A solver for the game "Rush hour". The project's code and documentation is available here.