Merkouris Papamichail Computer Scientist

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Athens, Greece

Scientific interests

Algorithms, Computability Theory, Discrete Mathematics, Logic Programming

Education

2020 – Present **NKUA, NTUA** – Athens, Greece
MSc in Algorithms, Logic and Discrete Mathematics, *Current GPA: 8.63.*

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

Selected Courses

- *Theory of Algorithms & Complexity*: Algorithmic Operational Research, Advanced Algorithms, Combinatorial Optimazation, Algorithmic Graph Theory, Algorithmic Game Theory, Approximate Algorithms, Parametrized Complexity.
- *Computability theory*: Theory of Computation, Computational Complexity, Theory of Recursion, Mathematical Logic.
- *Discrete Mathematics*: Graph Theory, Mathematics for Computer Science, Theory of Linear Programming.
- *Theory of Programming Languages*: Principles of Programming Languages, Logic Programming.
- *Algorithms & Applications:* Computational Geometry, Machine Learning, Algorithms in Structural Bioinformatics

MSc Thesis

2021 – Present **Sorting & Selection Problems in Partially Ordered Sets**
Advisor: prof. Stavros Kolliopoulos.

BSc Thesis

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

You can download a printer-friendly version of this resume here.

Publications

2022 **Implementation of Adaptation Procedure on Misinformation Games**
M.Papamichail, C. Varsos, G. Flouris - SETN 2022
The paper has been accepted, and will be presented in the 12th Conference on Artificial Intelligence (SETN 2022), this September. The paper was a result of my work as intern in the Institute of Computer Science, FORTH (see bellow).

Internship

2021 – Present **Graduate Research Assistant**
Institute of Computer Science, FORTH
Crete, Greece
Software Implementation of the Adaptation Procedure on Misinformation Games. Based on the paper of C. Varsos, G. Flouris, et al. *"A Study of Misinformation Games"*. In PRICAI 2021, Hanoi, Vietnam, Vol. 13031. Springer, 76–87. The 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.

Programming Languages

Imperative Programming: C++, Python.

Scientific Computations: Octave, Matlab.

Declarative Programming: Clingo, Prolog, Haskell.

Operating Systems: Linux.

Markdown Languages: LaTeX.

Selected Presentations and Reports

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. You can find the presentation and report 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. You can find the presentation and report 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. You can find the presentation and report 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. You can find the presentation and report here (in Greek).

Selected Programming Projects

Fall 2021 **Algorithms' implementations in C++**

For the master's advanced course on Algorithms & Complexity. You can find the project's code and documentation 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.

Fall 2019 **Constraint problems in ECLiPSe Prolog**

For the bachelor's course on Logic Programming. You can find the project's code and documentation 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++. You can find the project's code and documentation 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. You can find the project's code and documentation 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. You can find the project's code and documentation 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. You can find the project's code and documentation 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. You can find the project's code and documentation here.

Fall 2017 **Game solver in Haskell**

For the bachelor's course on Principles of Programming Languages. A solver for the game "Rush hour". You can find the project's code and documentation here.