

# Giorgos Kritikakis

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## SUMMARY

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My name is Giorgos (George). I am a passionate software engineer and data analyst. My area of interest includes Software development, Algorithms and Systems Analysis, Data Analysis and Visualization. Currently, I serve in the Research and IT Department at Greek Army (from March 2022 to December 2022).

## SKILLS

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**Programming languages:** Java, C/C++, Python, Javascript, Ocaml.

**Applications/Technologies:** NetworkX, yWorks, TSP(Tom Sawyer Perspectives), OGDF(Open Graph Drawing Framework), jfree, pthreads, java threads, OMP, MPI, Latex, C Intermediate Language (CIL), Visual Studio, Eclipse, NetBeans, VirtualBox, Git, Matlab, Unix Shell, LLVM.

**Operating systems:** Windows, Linux.

**Web Development:** HTML, CSS, CSS Grid, CSS Flexbox, Bootstrap, Javascript, JSP, AJAX.

## PROFESSIONAL EXPERIENCE

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### IT support

**Greek Army - SEAP Heraklion**

Mar 2022 - present

Maintain all the systems, the servers, and the networks in the military camp.

### M.Sc. Student/Associate researcher

**University of Crete - Graph and Information Visualization Laboratory**

2020 - 2022

My work "Analysis and Visualization of Hierarchical Graphs" offers solutions to vital open problems. The document is on my personal web page and the code in my GitHub repository.

– PBF (Path Based Framework).

PBF is a new general-purpose hierarchical graph drawing framework. Early results of Path Based Framework were presented as poster in gd2020. The first implementation was integrated into TSP (Tom Sawyer Perspective). In order to make a more advanced tool, with more automation, that creates thousands of drawing in a few milliseconds, I created it as a stand-alone java program. PBF was extensively evaluated, comparing it with the most recent state-of-the-art solution and running a user study. All work is described in the paper "Experiments and a User Study for Hierarchical Drawings of Graphs".

– Path/Chain decomposition graph techniques.

The chain decomposition heuristic I proposed is the fastest and more practical way to decompose the graph into chains. The paper "Fast and Simple DAG Decomposition with Applications" is currently under peer review in WALCOM 2023.

– Transitive closure, and reachability query solutions.

Utilizing the chain decomposition algorithms we can offer new bounds in transitive closure solutions. I have suggested a methodology to build an indexing scheme. From 1990 until today, the time complexity bound I offer for this scheme is the lowest. Again, I extensively evaluated the algorithms by running experiments.

**Postgraduate Teaching Assistant**  
**University of Crete**

2020 - 2022

- CS-484 Complex Network Dynamics [Spring 2021]
- CS-380 Algorithms and Complexity [Fall 2021, Fall 2020]
- CS-486 Principles of Distributed Computing [Spring 2020]

**Associate Researcher**

**Institute of Computer Science (ICS), CARV Laboratory**

2019 - 2020

Extension of the SCOOP compiler source-to-source C code transformations. SCOOP produces output for the PARTEE runtime system, a project developed at the Computer Architecture and VLSI Systems (CARV) Laboratory of the Institute of Computer Science (ICS) of the Foundation of Research and Technology Hellas (FORTH). PARTEE runtime uses annotations to specify tasks and their memory footprints. Scoop enables us to use pragma directives for the task annotation.

## EDUCATION

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2022 M.Sc. (Computer Science) at **University of Crete**

Thesis: Analysis and Visualization of Hierarchical Graphs.

Advisor: Proffesor Ioannis G. Tollis.

Area of Study: *a)* Algorithms and Systems Analysis, *b)* Parallel and Distributed Systems.

2020 B.Sc. (Computer Science) at **University of Crete**

Thesis: Extension of the PARTEE runtime system with support for dynamic memory allocation.

Advisor: Assistant Professor Polyvios Pratikakis.

Area of Study: Software Systems and Applications..

## PUBLICATIONS

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- Algorithms and Experiments using the Path Based Hierarchical Drawing Framework. Panagiotis Lionakis, Giorgos Kritikakis, and Ioannis G. Tollis  
(poster, 28th International Symposium on Graph Drawing and Network Visualization, GD 2020)
- Experiments and a User Study for Hierarchical Drawings of Graphs. Panagiotis Lionakis, Giorgos Kritikakis, and Ioannis G. Tollis  
(ArXiv 2022)

## ADDITIONAL INFO

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Passionate and curious, I like learning new things. I have attended more than 100 hours of training on online platforms like Udemy in topics like IoT, wireless communication, Arduino Raspberry and esp boards, version control systems (git and GitHub), Linux inter-process communication, web development, and more. Additionally, I have finished lifeguard's school and have long experience as a seasonal lifeguard on the coasts of north Crete.

## SEVERAL PROJECTS

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- Top-down (2, 3, 4) tree with fine-grained synchronization  
HY486-Principles of Distributed Computing
- QBert 2D game  
HY452-Software Systems and Applications  
Allegro library and C++ were used. A project of 2.5K lines of code implemented with a specific architecture.
- 2D card game  
HY252-Object-Oriented Programming  
Java, Model-view-controller architectural pattern was used

- Liquid Democracy  
HY359-Web Programming  
Liquid Democracy is a more agile form of democracy. To materialize this system of voting, a web page was constructed based on Java CGI to sign up/login and vote for candidates. Moreover, you can create your own topics and let the community vote on them online. You can even elect a delegator if you trust someone else. (html, css, javascript, ajax requests, json, servlets, sessions, cookies, apache server)
- Iperf imitation  
HY435-Network Technology Programming Lab  
Socket programming
- micro tcp protocol  
HY335-Computer Networks  
A reliable protocol over UDP with key features of TCP, socket programming
- Barnes-Hut algorithm, sudoku, game of life  
HY342-Parallel Programming  
pthreads, java threads, OMP
- Linux C shell (command interpreter)  
HY345-Operating Systems  
Processes manipulation, System Calls, interprocess communication (pipes), shell variables, redirection (dup2).
- Alpha programming language(compiler)  
HY340-Languages and Compilers  
Lexical analysis (lex), syntax analysis (yacc), intermediate code generation (quads), target code and virtual machine.
- Remote control and monitoring system for devices and sensors  
Raspberry Pi, arduino, full-stack development, DIY project