Giorgos Kritikakis

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SUMMARY

Giorgos (or George) Kritikakis is an experienced Computer Science professional with a strong background in both academic research and commercial application development. His work spans cutting-edge research projects that push the boundaries of innovation, as well as the successful development and deployment of commercial products. This dual expertise allows him to bridge the gap between theoretical exploration and practical implementation. He is currently working at Tom Sawyer Software. Giorgos holds both a Bachelor's and a Master's degree from the University of Crete.

PROFESSIONAL EXPERIENCE

Associate Product Developer
Tom Sawyer Software   Mar 2023 - Present

Developing and maintaining key features of Tom Sawyer Perspective, including the Query Builders.

IT support
Greek Army - SEAP Heraklion   Mar 2022 - Dec 2022

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

The work "Analysis and Visualization of Hierarchical Graphs" offers solutions to vital open problems. You can find the document on my personal web page (doc) and the code is in my GitHub repository (repo). See the updated corresponding preprints in the publication section. This work includes:

– PBF (Path Based Framework).

  PBF is a new general-purpose hierarchical graph drawing framework. Early results of the Path-Based Framework were presented as a 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.

  Path/chain decomposition approach that is applicable, fast, and produces results very close to the optimum. This technique is the currently fastest way, theoretically and practically, to produce a chain decomposition. Extensive experiments have been conducted on these algorithms. Additionally, an optimization of the Fulkerson method for minimum chain decomposition using an indexing scheme (see next bullet) is included in my GitHub repository.

– Transitive closure, and reachability query solutions.

  Utilizing fast chain decomposition a new linear time sparsification technique is introduced that allows us to offer new bounds in transitive closure solutions. Furthermore, I have presented a methodology to build an indexing scheme. The experiments shed light on the behavior and expose the factors that affect transitive closure algorithms.

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

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

- Parameterized Linear Time Transitive Closure. Giorgos Kritikakis, and Ioannis G. Tollis. (ArXiv Apr 2024).

- Fast Reachability Using DAG Decomposition. Giorgos Kritikakis, and Ioannis G. Tollis. 21st International Symposium on Experimental Algorithms (SEA 2023).

- Experiments and a User Study for Hierarchical Drawings of Graphs. Panagiotis Lionakis, Giorgos Kritikakis, and Ioannis G. Tollis. IEEE Access. May 29, 2023

- Fast and Practical DAG Decomposition with Reachability Applications. Giorgos Kritikakis, and Ioannis G. Tollis (ArXiv Dec 2022).

- Experiments and a User Study for Hierarchical Drawings of Graphs. Panagiotis Lionakis, Giorgos Kritikakis, and Ioannis G. Tollis (ArXiv Sep 2022).

- Algorithms and Experiments using the Path-Based Hierarchical Drawing Framework. Panagiotis Lionakis, Giorgos Kritikakis, and Ioannis G. Tollis.
  This work has been presented as a poster at the 28th International Symposium on Graph Drawing and Network Visualization, GD 2020).

ADDITIONAL INFO

With a strong passion for learning, he has completed over 200 hours of training through online platforms and seminars on topics such as IoT, wireless communication, Arduino, Raspberry Pi, ESP boards, version control systems (Git and GitHub), Linux inter-process communication, web development, and more. Residing on the island of Crete, his proximity to the Mediterranean Sea sparked an interest in the waters, leading him to undergo lifeguard training. Since 2015, he has been a certified professional lifeguard. In

October 2023, he furthered his qualifications by obtaining the SSI Open Water Diver certification.

Several Projects

- Top-down (2, 3, 4) tree with fine-grained synchronization.

- QBert 2D game.
  Allegro library and C++ were used. A project of 2.5K lines of code implemented with a specific architecture.

- 2D card game.
  Java, Model–view–controller architectural pattern was used.

- Liquid Democracy.
  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, cokkies , apache server).

- Iperf imitation.
  Socket programming.

- Micro tcp protocol.
  A reliable protocol over UDP with key features of TCP, socket programming.

- Barnes-Hut algorithm, sudoku, game of life.
  Pthreads, java threads, OMP.

- Linux C shell (command interpreter).
  Processes manipulation, System Calls, interprocess communication (pipes), shell variables, redirection (dump2).

- Alpha programming language(compiler).
  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.