

# Iacovos G. Kolokasis

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## Research Interests

- Memory and Storage Systems
- Managed Languages and Runtimes
- Garbage Collection

## Research Experience

### ICS-FORTH

GRADUATE RESEARCH ASSISTANT

- Evaluate different approaches to expand memory address space for JVM-based large-scale data analytics frameworks using fast storage devices
- Implement an extra storage level on Apache Spark to cache data off-heap on non-volatile memories.
- **Supervision:** Angelos Bilas and Polyvios Pratikakis

Heraklion, Greece

Sep. 2017 - Present

### ICS-FORTH

UNDERGRADUATE RESEARCH ASSISTANT

- Schedule techniques for data placement for large scale graph analytics (Apache Spark GraphX).
- **Supervisor:** Polyvios Pratikakis

Heraklion, Greece

Jan. 2017 - Aug. 2017

## Industrial Experience

### SAP HANA VORA

INTERN RESEARCH STUDENT

- Improve/Enhance the Data Structure of the Syntax Tree of the SQL Parser

Walldorf, Germany

Jun. 2019 - Sep. 2019

### Huawei Research Center

PHD INTERN RESEARCH STUDENT

- Managed Runtime on Dissagregated Memory Environments

Munich

Jun. 2022 - Sep. 2022

## Education

### University of Crete

PH.D IN COMPUTER SCIENCE

- **Advisor:** Angelos Bilas, **Co-advisors:** Polyvios Pratikakis, Shoaib Akram

Heraklion, Greece

Jan 2021 - Present

### University of Crete

M.Sc. IN COMPUTER SCIENCE

- **GPA:** 9.43/10
- **Thesis Topic:** TeraCache: Efficient Caching over Fast Storage Devices
- **Supervision:** Polyvios Pratikakis and Angelos Bilas

Heraklion, Greece

Sep. 2017 - Oct 2020

### University of Crete

B.Sc. IN COMPUTER SCIENCE

- **GPA:** 7.62/10 (9th out of 65 in B.Sc. Graduates 2017)
- **Thesis Topic:** Locality optimizations for distributed graph analytics computations
- **Supervisor:** Polyvios Pratikakis

Heraklion, Greece

Sep. 2011 - Jul. 2017

## Publications

### FULL PAPERS / ARTICLES .....

**Iacovos G. Kolokasis**, Giannos Evdorou, Shoaib Akram, Christos Kozanitis, Anastasios Papagiannis, Foivos Zakkak, Polyvios Pratikakis, and Angelos Bilas. TeraHeap: Reducing Memory Pressure in Managed Big Data Frameworks. In Proceedings of the 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, Volume 3 (ASPLOS '23), March 25–29, 2023, Vancouver, BC, Canada.

**Iacovos G. Kolokasis**, Anastasios Papagiannis, Foivos Zakkak, Polyvios Pratikakis, and Angelos Bilas. Say Goodbye to Off-heap Caches! On-heap Caches Using Memory-Mapped I/O. In Presented as part of the 12th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage '20), Boston, MA, 2020. USENIX. (**Best Presentation Award**)

**Iacovos G. Kolokasis** and Polyvios Pratikakis. Cut to Fit: Tailoring the Partitioning to the Computation. 2nd Joint International Workshop on Graph Data Management Experiences & Systems (GRADES) and Network Data Analytics (NDA), June 30-July 2019, Amsterdam, Netherlands

### POSTERS .....

**Iacovos G. Kolokasis**, Shoab Akram, Foivos Zakkak, Polyvios Pratikakis, and Angelos Bilas. *DynaHeap: Dynamic Division of DRAM between Heterogeneous Managed Heaps*. 19th European Conference on Computer Systems (EuroSys '24).

**Iacovos G. Kolokasis**, Shoab Akram, Foivos Zakkak, Polyvios Pratikakis, and Angelos Bilas. *DynaHeap: Dynamic Division of DRAM between Heterogeneous Managed Heaps*. 29th ACM Symposium on Operating Systems Principles (SOSP '23).

**Iacovos G. Kolokasis**, Anastasios Papagiannis, Foivos Zakkak, Shoab Akram, Christos Kozanitis, Polyvios Pratikakis, and Angelos Bilas. *TeraCache: Efficient Caching over Fast Storage Devices*. MSR Cambridge PhD Virtual Workshop on Next-Generation Cloud Infrastructure'21.

**Iacovos G. Kolokasis**, Anastasios Papagiannis, Foivos Zakkak, Polyvios Pratikakis, and Angelos Bilas. *Garbage Collection or Serialization? Between a Rock and a Hard Place!* 16th International Summer School on Advanced Computer Architecture and Compilation for High-Performance and Embedded Systems (ACACES).

## TECHNICAL REPORTS .....

**Iacovos G. Kolokasis** and Polyvios Pratikakis. *Cut to Fit: Tailoring the Partitioning to the Computation*. Technical Report 469, ICS – FORTH, Apr 2018

## Talks

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Apr. 2024	<b>GateKeeper: Transparent Placement of Big Data Objects in Hybrid Managed Heaps</b> , 19th European Conference on Computer Systems (EuroSys '24)	<i>Athens, Greece</i>
Apr. 2024	<b>FlexHeap: Dynamic DRAM Partitioning Between Managed Heap and Page Cache</b> , CS446: Managed Runtime Systems	<i>Heraklion, Greece</i>
Mar. 2023	<b>TeraHeap: Reducing Memory Pressure in Managed Big Data Frameworks</b> , 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'23)	<i>Vancouver, Canada</i>
Jul. 2021	<b>TeraCache: Efficient Caching over Fast Storage Devices</b> , HPC I/O in the Data Center Workshop	<i>Virtual</i>
Mar. 2021	<b>TeraCache: Efficient Caching over Fast Storage Devices</b> , MSR Cambridge PhD Virtual Workshop on Next-Generation Cloud Infrastructure	<i>Virtual</i>
Nov. 2020	<b>TeraCache: Efficient Caching over Fast Storage Devices</b> , Data and AI Summit Europe'20	<i>Virtual</i>
Jul. 2020	<b>Say Goodbye to Off-heap Caches! On-heap Caches Using Memory-Mapped I/O</b> , HotStorage'20	<i>Virtual</i>
Oct. 2019	<b>In-Memory Computing at Scale? Look Beyond Physical DRAM</b> , University of Crete	<i>Heraklion, Greece</i>
Sep. 2019	<b>Improve/Enhance the Data Structure of the Syntax Tree of the SQL Parser</b> , SAP HANA	<i>Walldorf, Germany</i>
Sep. 2019	<b>Scaling In-Memory Computing for JVM-based Big Data Analytics</b> , SAP HANA	<i>Walldorf, Germany</i>
Sep. 2019	<b>Cut to Fit: Tailoring the Partitioning to the Computation</b> , SAP HANA	<i>Walldorf, Germany</i>
Jun. 2019	<b>Cut to Fit: Tailoring the Partitioning to the Computation</b> , GRADES-NDA 2019	<i>Amsterdam, Netherlands</i>
Jul. 2018	<b>Cut to Fit: Tailoring the Partitioning to the Computation</b> , 14th ACACES Summer School - HiPEAC	<i>Fiuggi, Italy</i>

## Honors & Awards

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Jan. 2024	<b>Award</b> , HiPEAC 2023 Paper Award	
Oct. 2023	<b>Scholarship</b> , Received a full scholarship to attend SOSP 2023 conference	Koblenz, Germany
Mar. 2023	<b>Scholarship</b> , Received a full scholarship to attend ASPLOS 2023 conference	Vancouver, Canada
2022 - 2024	<b>Scholarship</b> , Received a Meta (Facebook) PhD fellowship	US
2021 - 2022	<b>Scholarship</b> , Received a TA scholarship from the Special Account for Research Funds (E.L.K.E) of the National and Kapodistrian University during Spring semester'2022	Heraklion, Greece
2021 - 2024	<b>Scholarship</b> , Received a PhD fellowship from Cyprus State Scholarship Foundation	Nicosia, Cyprus
Jan. 2022	<b>Scholarship</b> , Received a full scholarship to attend ASPLOS 2022 conference	Lausanne, Switzerland
Dec. 2021	<b>Scholarship</b> , Received a full scholarship from Independent Power Transmission Operator (ADMIE)	Heraklion
Jul. 2021	<b>Scholarship</b> , Received a full scholarship from Usenix Association to attend OSDI 2021 conference	Virtual Conference
Feb. 2021	<b>Scholarship</b> , Received a full scholarship from Usenix Association to attend FAST 2021 conference	Virtual Conference
Dec. 2020	<b>Scholarship</b> , Received a full scholarship from Independent Power Transmission Operator (ADMIE)	Heraklion
Jul. 2020	<b>Scholarship</b> , Received a full scholarship from Usenix Association to attend SOSP 2020 conference	Virtual Conference
Sep. 2020	<b>Scholarship</b> , Received Scholarship from Independent Power Transmission Operator (IPTO)	Heraklion, Greece
Jul. 2020	<b>Award</b> , Received Best Presentation Award in HotStorage 2020	Virtual Conference
Jul. 2020	<b>Scholarship</b> , Received a full scholarship from Usenix Association to ATC 2020 conference	Virtual Conference
Oct. 2019	<b>Scholarship</b> , Received a full scholarship from Huawei to attend SOSP 2019 conference	Ontario, Canada
Sep. 2018	<b>Scholarship</b> , Received a full scholarship from SAP SE to attend the 6 <sup>th</sup> Heidelberg Laureate Forum	Heidelberg, Germany
Jul. 2018	<b>Scholarship</b> , Received a full scholarship from HiPEAC to attend the 14 <sup>th</sup> ACACES Summer School	Fiuggi, Italy
Mar. 2017	<b>Scholarship</b> , Received five full graduate research scholarships from ICS-FORTH while I was working on my master thesis	Heraklion, Crete
Jul. 2017	<b>Scholarship</b> , Received a full undergraduate research scholarship from ICS-FORTH (3 months) while I was working on my thesis	Heraklion, Crete
Sep. 2012	<b>Scholarship</b> , My second year at the university was supported fully by fellowships "Stelios Orphanoudakis"	Heraklion, Greece
Jun. 2009	<b>Finalist</b> , Programming contest organized by CYTA	Nicosia, Cyprus

## Service

May. 2023	<b>Member</b> , EuroSys'23 Artifact Evaluation Committee	Rome, Italy
Oct. 2022	<b>Member</b> , MICRO'22 Artifact Evaluation Committee	Chicago, USA
Oct. 2022	<b>Member of Organization Committee</b> , 2nd Career Day CSD, UoC	Heraklion, Greece
Apr. 2022	<b>Member</b> , EuroSys'22 Shadow Program Committee	Virtual
Oct. 2021	<b>Member</b> , SOSP'21 Artifact Evaluation Committee	Virtual
Jul. 2021	<b>Member</b> , OSDI'21 Artifact Evaluation Committee	Virtual
Apr. 2021	<b>Member</b> , ASPLOS'21 Artifact Evaluation Committee	Virtual
Apr. 2021	<b>Member</b> , EuroSys'21 Artifact Evaluation Committee	Edinburgh
Feb. 2021	<b>Member of Organization Committee</b> , 1st Career Day CSD, UoC	Heraklion, Greece
2019 - Present	<b>Student Member</b> , Association of Computing Machinery (ACM)	
Apr. 2021	<b>Volunteer (Host social media)</b> , EuroSys 2021	Edinburgh, UK
Jun. 2020	<b>Volunteer (Host zoom sessions)</b> , 2nd Summit on Gender Equality in Computing (GEC 2020)	Virtual Conference
Apr. 2020	<b>Volunteer (Lead EuroSys'20 Slack workspace and be a co-host in zoom sessions)</b> , EuroSys 2020	Virtual Conference
Mar. 2020	<b>Member</b> , ASPLOS'20 Artifact Evaluation Committee	Switzerland
Oct. 2019	<b>Co-head of Organization Committee</b> , 1st Graduate Students Conference CSD, UoC	Heraklion, Greece
Sep. 2019	<b>Deputy Graduate Students Representative</b> , Computer Science Dept., University of Crete (2019-2020)	Heraklion, Greece
Jan. 2018	<b>Graduate Students' Association Representative</b> , Computer Science Dept., University of Crete (2018-2020)	Heraklion, Greece
May 2012	<b>Public Relation Officer</b> , Board Council of the Cypriot Students' Union (2012-2015)	Heraklion, Greece

## Teaching Experience

### Systems Programming Lab (CS-255)

TEACHING ASSISTANT | INSTRUCTOR: ANGELOS BILAS

- Answering students questions about the assignments
- Marking assignments submissions and examination scripts
- Part of my responsibilities was to teach tutorials for students, design assignments with the professor and another TA, and mark assignments and exams

University of Crete  
Spring 2021, 2022, 2023, 2024

### Introduction to Computer Science (CS-100)

TEACHING ASSISTANT | INSTRUCTOR: POLYVIOS PRATIKAKIS

- Part of my responsibilities was to teach tutorials for students, design assignments with the professor and another TA, and mark assignments and exams

University of Crete  
Fall 2018, 2019, 2020, 2021, 2022, 2023

### Parallel Computing (CS-342)

TEACHING ASSISTANT | INSTRUCTOR: POLYVIOS PRATIKAKIS

- Part of my responsibilities was to teach tutorials for students on a weekly basis, mark assignments and exams

University of Crete  
Spr. 2018, 2019

### **Data Structures (CS-240)**

TEACHING ASSISTANT | INSTRUCTOR: PANAGIOTA FATOUROU

- Part of my responsibilities was to co-design the project with the professor and another TA, project presentation, answer students questions, and mark assignments and exams

*University of Crete*

*Spr. 2018, 2020*

### **Digital Design (CS-120)**

TEACHING ASSISTANT | INSTRUCTOR: MANOLIS G.H. KATEVENIS

- Responsible for two hour laboratories where undergraduate students learn the basics of digital design and implement a simple processor, mark assignments and exams

*University of Crete*

*Fall 2017*

## **References**

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### **Angelos Bilas**

PROFESSOR AT UNIVERSITY OF CRETE & ASSOCIATE RESEARCHER AT ICS-FORTH

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*Heraklion, Greece*

### **Polyvios Pratikakis**

PROFESSOR AT UNIVERSITY OF CRETE & ASSOCIATE RESEARCHER AT ICS-FORTH

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*Heraklion, Greece*

### **Shoaib Akram**

ASSISTANT PROFESSOR AT THE AUSTRALIAN NATIONAL UNIVERSITY

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*Canberra, Australian*