

Iacovos G. Kolokasis

ICS-FORTH, 100 N. Plastira Av. Vassilika Vouton, Heraklion, GR-70013, Greece

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Research Interests

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

Research Experience

ICS-FORTH

Heraklion, Greece

GRADUATE RESEARCH ASSISTANT

Sep. 2017 - Present

- Evaluate approaches to expanding 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.
- Design of TeraHeap, a system that extends the JVM to use a second high-capacity managed heap over an NVMe SSD alongside the regular heap in DRAM to reduce memory pressure in big data frameworks.
- Design of FlexHeap, a memory partitioning system in the JVM that dynamically divides a fixed DRAM budget between the managed heap and the page cache.
- **Supervision:** Angelos Bilas and Polyvios Pratikakis

ICS-FORTH

Heraklion, Greece

UNDERGRADUATE RESEARCH ASSISTANT

Jan. 2017 - Aug. 2017

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

Industrial Experience

SAP HANA VORA

Walldorf, Germany

INTERN RESEARCH STUDENT

Jun. 2019 - Sep. 2019

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

Huawei Research Center

Munich

PHD INTERN RESEARCH STUDENT

Jun. 2022 - Sep. 2022

- Managed Runtime on Disaggregated Memory Environments

Education

University of Crete

Heraklion, Greece

PH.D IN COMPUTER SCIENCE

Jan 2021 - Present

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

University of Crete

Heraklion, Greece

M.Sc. IN COMPUTER SCIENCE

Sep. 2017 - Oct 2020

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

University of Crete

Heraklion, Greece

B.Sc. IN COMPUTER SCIENCE

Sep. 2011 - Jul. 2017

- **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

Publications

FULL PAPERS / ARTICLES

Iacovos G. Kolokasis, Giannos Evdourou, Shoaib Akram, Christos Kozanitis, Anastasios Papagiannis, Foivos Zakkak, Polyvios Pratikakis, and Angelos Bilas. TeraHeap: Exploiting Flash Storage for Mitigating DRAM Pressure in Managed Big Data Frameworks. ACM Transactions on Programming Languages and Systems (TOPLAS).

Iacovos G. Kolokasis, Giannos Evdourou, 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, Shoaib 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, Shoaib 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, Shoaib 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

Honors & Awards

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

Service

Mar. 2025	Member , EuroSys'25 Shadow Program Committee	Rotterdam
Mar. 2025	Member , EuroSys'25 Artifact Evaluation Committee	Rotterdam
Jul. 2022-Present	Member , JSys Artifact Evaluation Committee	
Oct. 2022	Member of Organization Committee , 2nd Career Day CSD, UoC	Heraklion, Greece
Apr. 2022	Member , EuroSys'22 Shadow Program Committee	Virtual
Jul. 2021	Member , OSDI'21 Artifact Evaluation Committee	Virtual
Apr. 2021	Member , ASPLOS'21 Artifact Evaluation Committee	Virtual
Apr. 2021	Member , EuroSys'21 Artifact Evaluation Committee	Edinburgh
Feb. 2021	Member of Organization Committee , 1st Career Day CSD, UoC	Heraklion, Greece
2019 - Present	Student Member , Association of Computing Machinery (ACM)	
Apr. 2021	Volunteer (Host social media) , EuroSys 2021	Edinburgh, UK
Jun. 2020	Volunteer (Host zoom sessions) , 2nd Summit on Gender Equality in Computing (GEC 2020)	Virtual Conference
Apr. 2020	Volunteer (Lead EuroSys'20 Slack workspace and be a co-host in zoom sessions) , EuroSys 2020	Virtual Conference
Mar. 2020	Member , ASPLOS'20 Artifact Evaluation Committee	Switzerland
Oct. 2019	Co-head of Organization Committee , 1st Graduate Students Conference CSD, UoC	Heraklion, Greece
Sep. 2019	Deputy Graduate Students Representative , Computer Science Dept., University of Crete (2019-2020)	Heraklion, Greece
Jan. 2018	Graduate Students' Association Representative , Computer Science Dept., University of Crete (2018-2020)	Heraklion, Greece
May 2012	Public Relation Officer , Board Council of the Cypriot Students' Union (2012-2015)	Heraklion, Greece

References

Angelos Bilas PROFESSOR AT UNIVERSITY OF CRETE & ASSOCIATE RESEARCHER AT ICS-FORTH bilas@ics.forth.gr	Heraklion, Greece
Polyvios Pratikakis PROFESSOR AT UNIVERSITY OF CRETE & ASSOCIATE RESEARCHER AT ICS-FORTH polyvios@ics.forth.gr	Heraklion, Greece
Shoaib Akram ASSISTANT PROFESSOR AT THE AUSTRALIAN NATIONAL UNIVERSITY shoaib.akram@anu.edu.au	Canberra, Australian