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RESEARCH PROFILE	I work in the intersection of Data Management, Distributed Systems and Specialized Hardware, with the goal of making data-intensive applications more efficient in the cloud and datacenter. <a href="#">Access my publication list on DBLP</a>
EDUCATION	<b>Ph.D., Computer Science</b> , ETH Zürich, Switzerland 2013 – 2018 Advisor: Prof. Gustavo Alonso <b>M.Sc., Computer Science</b> , ETH Zürich, Switzerland 2011 – 2013 <b>B.Sc., Computer Science</b> , UTCN Cluj-Napoca, Romania 2007 – 2011
PROFESSIONAL EXPERIENCE	<b>IT University</b> , Copenhagen, DK October 2020 – Present <i>Associate Professor in Computer Science</i> <b>IMDEA Software Institute</b> , Madrid, ES September 2018 – September 2020 <i>Assistant Research Professor</i> Working in the area of distributed systems and hardware acceleration for data processing. <b>IBM Research</b> , Rüschlikon, CH May 2018 – July 2018 <i>Visiting Researcher</i> Topic: Exploring software and hardware acceleration opportunities for Blockchains. <b>Microsoft Research</b> , Redmond, WA June 2014 – August 2014 <i>Research Intern</i> Topic: Adding support for B-tree indexes and a local cache to the FPGA in Cipherbase. <b>Xilinx Labs</b> , Dublin, Ireland September 2012 – March 2013 <i>Research Intern (Master Thesis)</i> Topic: Design of a hash table for an FPGA-based key-value store. <b>INRIA</b> , Sophia-Antipolis, France July 2011 – August 2011 <i>Research Intern (OASIS Group)</i> Topic: Annotation-based automatic parallelization of Active Objects in ProActive. <b>INRIA</b> , Sophia-Antipolis, France June 2010 – August 2010 <i>Research Intern (OASIS Group)</i> Topic: Parallel programming and scheduling for multicores in the ProActive Framework
AWARDS AND SCHOLARSHIPS	<ul style="list-style-type: none"> <li>• <b>Juan de la Cierva Formación 2018</b>, Spanish Science Foundation (EUR 25.000)</li> <li>• <b>ACM EuroSys Roger Needham PhD Award 2019 – Honorable Mention</b></li> <li>• <b>ETH Zürich Medal for Doctoral Dissertations of 2018</b> (CHF 2000)</li> <li>• ETH Zürich Excellence Scholarship for Master's Studies 2011-2013</li> </ul>
MANAGED PROJECTS	2021-2024: <b>Novo Nordisk Foundation Start Package</b> Grant. (Funding for a PostDoc and a PhD student; total DKK 3.1M) Principal investigator: Z. István.  2019-2020: <b>ACCORD</b> : Accelerated Ordering Service for Distributed Ledgers. <b>Marie Curie Individual Fellowship 2018</b> . Ref: EU Project 842956; (EUR 170K) Principal investigator: Z. István. Mentor: M. Hermenegildo.

OTHER FUNDING 2019-2020: **BOSCO**: Fundamentos para el desarrollo, analisis y comprension de los blockchains y los contratos inteligentes. *Spanish National Research Grant, Ref.: PGC2018-102210-B-I00*, Principal Investigators: C. Sanchez, P. Ganty

2018-2019: **BLOQUES-CM**: Intelligent Contracts and Scalable Blockchains and Insurance through Verification and Analysis.  
**Community of Madrid Research Grant**. Ref.: P2018/TCS-4339  
Coordinator: J. Caballero; Members: UCM, UPM and IMDEA Software.

SUPERVISION EXPERIENCE **Member of PhD Committee**  
Mario Daniel Ruiz Noguera (UAM, Madrid) Defended: January 2020

**PostDoc Supervision**  
Dr. Matei Istoan at IMDEA Winter 2019

**PhD Internship Supervision**  
Mustapha Bouhali (ENP Oran, Algeria) at IMDEA Spring 2020  
Man-Kit Sit (Imperial College, London) at IMDEA Fall 2019 - Spring 2020

**MSc Thesis Supervision**  
Lucas Kuhring (UPM, Madrid) at IMDEA Spring 2019  
Srivatsan Lakshmi (UPM, Madrid) at IMDEA Spring 2019  
Zhenhao He at ETHZ (co-advised with David Sidler) Spring 2018  
Jakub Szymanek at ETHZ Spring 2014

**BSc Student (Thesis and Internship) Supervision**  
Jonas Aagaard at ITU (co-supervised with P. Bonet) Spring 2021  
N. Nielsen and R. Bayer at ITU (co-supervised with P. Tozun) Spring 2021  
Paula Benedec (UTCN, Romania) at IMDEA Summer 2020, Spring 2021  
Andrei Tosa (UTCN, Romania) at IMDEA Summer 2020, Spring 2021  
Samuel Garcia (UPM, Madrid) at IMDEA Spring 2020  
Claudiu Mihali (UTCN, Romania) at IMDEA Summer 2019  
Eva Garcia (UAM, Madrid) at IMDEA Fall 2018  
Mickey Vanska at ETHZ (co-advised with David Cock) Spring 2017  
Tim Taubner at ETHZ Spring 2015

COMMUNITY SERVICE **Conference/Workshop Organization:**  
Workshop co-chair for EuroSys'21; Sustainability chair for VLDB'21; Workshop Co-organizer: SFMA'19, SPMA'20 (EuroSys) , SERIAL'19 and '20 (Middleware) ; Hackathon Co-organizer: [chainReaction 2020](#)

**Recent PC Member:**  
*DB conferences:* VLDB'22, EDBT'22-21-20, BICOD'21, SIGMOD'21; *Systems conferences:* ATC'21, DEBS'21, SRDS'20, HotCloud'20, ASPLOS'20 (light); *FPGA conferences:* FCCM'21, FCCM'20; *Others:* Damon'21, EuroSys-DW 2020 and 2019.

**Recent Reviewer for Journals:**  
IEEE TC-CS (04.2020), ACM TACO (02.2019, 06.2017), IEEE TKDE (01.2019, 09.2017)

SELECTED INVITED TALKS TU Munich, Germany. June 2020 (virtual); ITU Copenhagen, Denmark. May 2020 (virtual); ETH Zurich, Switzerland, November 2019; SAP Walldorf, Germany. November 2019; UCM, Madrid, Spain. May 2019; Technion, Haifa, Israel. November 2018; KAUST, Thuwal, Saudi Arabia. October 2017; TU Dresden, Germany. July 2017; IBM Research Rüschlikon, CH. October 2016; Xilinx Labs, San Jose, CA. March 2016; IBM Research Almaden, San Jose, CA. March 2016;

List of publications:

CONFERENCE  
PUBLICATIONS

1. **Design Patterns for Code Reuse in HLS Packet Processing Pipelines.** H. Eran, L. Zeno, **Z. István**, M. Silberstein. *27th IEEE Int'l Symposium on Field-Programmable Custom Computing Machines (FCCM'19)*, 2019.
2. **A Flexible K-Means Operator for Hybrid Databases.** Z. He, D. Sidler, **Z. István**, G. Alonso. *International Conference on Field Programmable Logic and Applications (FPL)*, 2018. (BFI: 0.31)
3. **Providing Multi-tenant Services with FPGAs: Case Study on a Key-Value Store.** **Z. István**, G. Alonso, A. Singla. *International Conference on Field Programmable Logic and Applications (FPL)*, 2018. (BFI: 0.42)
4. **Accelerating Pattern Matching Queries in Hybrid CPU-FPGA Architectures.** D. Sidler, **Z. István**, M. Ewaida, G. Alonso. *ACM SIGMOD/PODS Conference (SIGMOD'17)*, 2017. (BFI: 0.94)
5. **Low-Latency TCP/IP Stack for Data Center Applications.** D. Sidler, **Z. István**, G. Alonso. *26th Int'l Conference on Field Programmable Logic and Applications (FPL'16)*, 2016. (BFI: 0.42)
6. **Runtime Parameterizable Regular Expression Operators for Databases.** **Z. István**, D. Sidler, G. Alonso. *24th IEEE Int'l Symposium on Field-Programmable Custom Computing Machines (FCCM'16)*, 2016
7. **Consensus in a Box: Inexpensive Coordination in Hardware** **Z. István**, D. Sidler, G. Alonso, M. Vukolic. *13th USENIX Symposium on Networked Systems Design and Implementation (NSDI '16)*, 2016. (BFI: 0.31)
8. **Histograms as a Side Effect of Data Movement for Big Data.** **Z. István**, L. Woods, G. Alonso. *ACM SIGMOD/PODS Conference (SIGMOD'14)*, 2014. (BFI: 1.25)
9. **A Flexible Hash Table Design For 10Gbps Key-value Stores on FPGAs.** **Z. István**, G. Alonso, M. Blott, K. Vissers. *23rd Int'l Conference on Field Programmable Logic and Applications (FPL'13)*, 2013. (BFI: 0.31)
10. **Multi-threaded Active Objects.** L. Henrio, F. Huet, **Z. István**. *15th Int'l Conference on Coordination models and Languages (COORDINATION)*, 2013. (BFI: 0.42)

BOOKS

11. **FPGA-Accelerated Analytics: From Single Nodes to Clusters** **Z. István**, K. Kara, D. Sidler. Book published at *Now Publishers*, 2020 (also as a journal: *Foundations and Trends in Databases*, Vol. 9, No. 2) (BFI: 2.08)

JOURNAL  
PUBLICATIONS

12. **Software-Defined Data Protection: Low Overhead Policy Compliance at the Storage Layer is Within Reach!** **Z. István**, S. Ponnappalli, V. Chidambaram.. *Proceedings of the VLDB Endowment* <sup>1</sup> 7,14 , 2021. (BFI: 0.42)
13. **doppioDB 1.0: Machine Learning inside a Relational Engine.** G. Alonso, **Z. István**, K. Kara, M. Owaida, D. Sidler. *IEEE Data Engineering Bulletin June 2019*.
14. **The Glass Half Full: Using Programmable Hardware Accelerators in Analytics.** **Z. István**. *IEEE Data Engineering Bulletin March 2019*.

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<sup>1</sup>Proceedings of the VLDB Endowment is a journal for short and timely research papers in all aspects of data management. Accepted works are also presented at the yearly VLDB conference – therefore it is not uncommon that authors list VLDB papers under conference publications.

15. **Active Pages 20 Years Later: Active Storage for the Cloud.** Z. István, D. Sidler, G. Alonso. *IEEE Internet Computing July/Aug 2018*. (BFI: 0.42)
16. **Caribou: Intelligent Distributed Storage.** Z. István, D. Sidler, G. Alonso. *Proceedings of VLDB Endowment, Volume 10, No. 11 (VLDB'17), 2017*. (BFI: 0.42)
17. **A Hash Table for Line Rate Data Processing.** Z. István, G. Alonso, M. Blott, K. Vissers. *ACM Transactions on Reconfigurable Technology and Systems (TRETS), 03/2015*. (BFI: 0.31)
18. **Ibex – An Intelligent Storage Engine with Support for Advanced SQL Off-loading.** L. Woods, Z. István, G. Alonso. *Proceedings of VLDB Endowment, Volume 7, No. 11 (VLDB'14), 2014*. (BFI: 0.42)

#### SHORT PAPERS

19. **Let's Add Transactions to FPGA-based Key-Value Stores!** Z. István. *16th International Workshop on Data Management on New Hardware (DAMON) held with ACM SIGMOD/PODS 2020*.
20. **Specialize in Moderation – Building Application-aware Storage Services using FPGAs in the Datacenter.** L. Kuhring, E. Garcia, Z. István. *11th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage'19), 2019*.
21. **Something New Under The Sun: Thoughts on Optimizing the Performance of Blockchains.** Z. István. *The 9th Workshop on Systems for Multi-core and Heterogeneous Architectures (SFMA) at EuroSys'19*.
22. **StreamChain: Do Blockchains Need Blocks?** Z. István, A. Sorniotti, M. Vukolic. *2nd Workshop on Scalable and Resilient Infrastructures for Distributed Ledgers (SERIAL) at Middleware'18*.
23. **Achieving 10Gbps Line-rate Key-value Stores with FPGAs.** M. Blott, K. Karras, L. Liu, K. Vissers, Z. István, J. Bar. *5th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud'13), 2013*.
24. **Adapting Active Objects to Multicore Architectures.** L. Henrio, F. Huet, Z. István, G. Sebestyen. *Int'l Symposium on Parallel and Distributed Computing (ISPDC 2011), 2011*. (BFI: 0.31)

#### PATENTS

25. **Systems and Methods for Providing Distributed Tree Traversal Using Hardware-Based Processing.** K. Eguro, Z. István, A. Arasu, R. Ramamurthy, K. Shriraghav. *US 20160147779 A1, Patent application filed 11/26/2014 (BFI: 0.5)*