Jonas Dann

CONTACT

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Google Scholar, LinkedIn Greifenseestrasse 53, 8050 Zürich, Switzerland

RESEARCH INTERESTS

Hardware specialization and heterogeneous computer systems for large-scale data processing in the cloud.

EDUCATION

Heidelberg University, *Computing Systems Group* 2019 - 2024
Ph.D., Computer Science (Graduation with highest honors: **Summa cum laude**)
Thesis: *FPGA-based Query Acceleration for Non-relational Databases*
Supervisor: Prof. Holger Fröning

Karlsruhe Institute of Technology 2016 - 2019
M.Sc., Computer Science
Thesis: *Improving Distributed External Sorting for Big Data in Thrill*
Supervisor: Prof. Peter Sanders

DHBW Mannheim 2013 - 2016
B.Sc., Applied Computer Science
Thesis: *Basic Components of Integration Systems on FPGAs*

WORKING EXPERIENCE

ETH Zurich, *Systems Group* 2024 - Present
Postdoctoral researcher working on hardware specialization and heterogeneous computer systems for large-scale data processing in the cloud.

SAP SE, *HANA Database Campus* 2019 - 2023
Ph.D. candidate in cooperation with Heidelberg University.

SVA GmbH, *Big Data & Analytics* 2017 - 2019
Working student developing an analytics pipeline based on Apache Spark for a consulting customer.

SAP SE, *Sports Sponsoring Sailing* 2016 - 2017
Working student managing sailing events and developing analytics software for sailing regattas.

SAP SE 2013 - 2016
Dual studies student working for various departments in the company.

PUBLICATIONS

B. Ramhorst, M. Heer, L. Liu, H. Kim, Jonas Dann, J.-S. Kim, G. Alonso. SCENIC: Stream Computation-enhanced SmartNIC. Under Submission, 2026.

Jonas Dann, G. Alonso. Should I Hide My Duck in the Lake?. In DaMoN, 2026.

M. Heer, B. Ramhorst, Y. Zhu, L. Liu, Z. Hu, Jonas Dann, G. Alonso. RoCE BALBOA: Service-enhanced Data Center RDMA for SmartNICs. In OSDI, 2026.

J. Li, Jonas Dann, Z. He, G. Alonso, S.R. Chalamalasetti, D. Milojicic, L. Evans, A. Veprinsky, R. Shi. StreamDedup: Distributed In-line Deduplication for Disaggregated Storage. TRETS, Volume 19, Issue 2, 2026.

Jonas Dann, T. Götz, D. Ritter, J. Giceva, H. Fröning. GraphMatch: Subgraph Query Processing on Steroids. In SIGMOD, 2026.

B. Ramhorst, D. Korolija, M. Heer, Jonas Dann, L. Liu, G. Alonso. Coyote v2: Raising the Level of Abstraction for Data Center FPGAs. In SOSP, 2025.

M. Kabic, B. Wu, Jonas Dann, G. Alonso. Powerful GPUs or Fast Interconnects: Analyzing Relational Workloads on Modern GPUs. In VLDB, 2025.

Jonas Dann, D. Ritter, H. Fröning. GraphScale: Scalable Processing on FPGAs for HBM and Large Graphs. TRETS, Volume 17, Issue 2, 2024.

Jonas Dann, D. Ritter, H. Fröning. Non-relational Databases on FPGAs: Survey, Design Decisions, Challenges. CSUR, Volume 55, Issue 11, 2023.

Jonas Dann, R. Wagner, D. Ritter, C. Färber, H. Fröning. PipeJSON: Parsing JSON at Line Speed on FPGAs. In DaMoN, 2022.

Jonas Dann, D. Ritter, H. Fröning. GraphScale: Scalable Bandwidth-efficient Graph Processing on FPGAs. In FPL, 2022.

Jonas Dann, D. Ritter, H. Fröning. Demystifying Memory Access Patterns of FPGA-based Graph Processing Accelerators. In GRADES-NDA, 2021.

Jonas Dann, D. Ritter, H. Fröning. Exploring Memory Access Patterns for Graph Processing Accelerators. In BTW, 2021.

D. Ritter, Jonas Dann, N. May, S. Rinderle-Ma. Hardware Accelerated Application Integration Processing: Industry Paper. In DEBS, 2017.

Open Source

Coyote, Maintainer
https://github.com/fpgasystems/Coyote
FPGA shell providing operating system abstractions & FPGA virtualization.

libstf, Maintainer
https://github.com/fpgasystems/libstf
Standard library for hardware design.

Maximus, Contributor
https://gitlab.inf.ethz.ch/PUB-SYSTEMS/eth-dataprocessing/Maximus
Modular, accelerated query engine for data analytics on heterogeneous systems.

Patents

US Patent 18,053,505 2023
Parsing JSON on Field-programmable Gate Arrays
Jonas Dann, Daniel Ritter

US Patent 17,747,922 2023
Scalable Bandwidth-efficient Graph Processing on Field-programmable Gate Arrays
Jonas Dann, Daniel Ritter

US Patent 11,354,771 2022
Simulation Environment for Efficient Assessment of Memory-bound Platforms

Jonas Dann, Daniel Ritter

US Patent 10,176,146 2019
Integration Pattern Implementations Using Reconfigurable Logic Devices
Daniel Ritter, Jonas Dann

TEACHING

Lecturer & Head Teaching Assistant Data Modeling and Databases	2026
Lecturer & Head Teaching Assistant Data Management Systems	2025
Lecturer Computing Platforms Seminar	2025
Lecturer & Teaching Assistant Data Modeling and Databases	2025
Lecturer & Teaching Assistant Data Management Systems	2024
Lecturer Data Modeling and Databases	2024
Talk Computing Platforms Seminar	2024

STUDENTS

Research assistants
Aaron Schüttpelz (May - June 2026)

Master students

Loris Keist, Nicola Lohr, Andrei Girjoaba, Lukasz Wala	2026
Philipp Engljähringer, Rasmus Lüscher, Sven Weber, Sven Zanetti, Cedric Caspar, Luca Tagliavini, Filippo Selvatici	2025
Linus Vogel, Paolo Rondot, Shiduo Xin, Philipp Hardegger	2024
Felix Göken (Heidelberg University), Tobias Götz (TU Munich)	2022
Jan Ahlbrecht (TU Munich)	2021
Royden Wagner (Heidelberg University)	2020

Bachelor students

Bruce Röttgers, Janos Kreissl, Vincent Franz	2026
Sebastian Gavrilas, Jakob Klemm, Manuel Sandmeier	2025
Michael Egloff, Severin Obrist	2024

TALKS

Invited talk, Oracle, US	2026
Invited talk, AMD-Xilinx, US	2026
Invited talk, Dell EMC, Germany	2025
Inv. talk, European Innovation Stars Workshop, Amsterdam, Netherlands	2024
Invited talk, Systems Group ETH Zürich, Zurich, Switzerland	2023
Invited talk, European Innovation Stars Workshop, Brussels, Belgium	2023
Invited talk, F4HD, co-located with HiPEAC, Toulouse, France	2023
Conference talk, FPL, Belfast, UK	2022
Poster, ACACES summer school, Fiuggi, Italy	2022
Conf. talk & poster, DaMoN, co-located with SIGMOD, Philadelphia, USA	2022
Conference talk, GRADES-NDA, co-located with SIGMOD, virtual	2021
Conference talk, BTW, virtual	2021

SERVICE

Reviewer VLDB	2026
Program Committee SoCC	2026
Program Committee HCDS workshop @ ASPLOS	2026
Reviewer Int. Conf. on Parallel Processing (ICPP)	2023
Reviewer Int. Tagung Wirtschaftsinformatik (WI)	2023
Reviewer Int. Conf. on Field Programmable Logic and Applications (FPL)	2021
Reviewer Int. Conf. on Parallel Processing (ICPP)	2021

LANGUAGES

German (mother tongue), English (work proficiency), Italian (beginner)