Jonas Dann

Contact

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Google Scholar, LinkedIn
Greifenseestrasse 53, 8050 Zürich, Switzerland

Research Interests

Hardware specialization, heterogeneous computer systems, and emerging hardware for large-scale data processing.

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*

Industry Experience

ETH Zurich, *Systems Group* 2024 - Present
Postdoctoral researcher working on hardware specialization and data transformations in data lakes.

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 events and developing and maintaining analytics software for sailing regattas.

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

Publications

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.

M. Heer, B. Ramhorst, Y. Zhu, L. Liu, Z. Hu, Jonas Dann, G. Alonso. RoCE BALBOA: Service-enhanced Data Center RDMA for SmartNICs. Under Submission, 2025.

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

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

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	**Master students** (co-supervision)	
	Philipp Engljähringer, Rasmus Lüscher, Sven Weber, Sven Zanetti, Cedric Caspar, Luca Tagliavini, Filippo Selvatici, Lukasz Wala	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	
	Sebastian Gavrilas, Jakob Klemm, Manuel Sandmeier	2025
	Michael Egloff, Severin Obrist	2024
TALKS	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	Shadow Program Committee EuroSys	2024
	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)	