Laurent Bindschaedler

Research Group Leader at Max Planck Institute for Software Systems (MPI-SWS)

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RESEARCH INTERESTS

Big Data Systems | Graph Processing | Machine Learning | ML for Systems | Distributed Systems | Storage | Databases | Cloud Computing | Blockchain

EDUCATION

Ph.D. in Computer Science, EPFL — Sep. 2015 - Sep. 2020

- Thesis: An Architecture for Load Balance in Computer Cluster Applications. Advisor: Prof. Willy Zwaenepoel.
- 30 ECTS. Classes: Principles of Computer Systems, Applied Data Analysis, Natural Language Processing.

M.S. in Computer Science, EPFL (GPA: 5.54/6) — Sep. 2009 - Jun. 2011

- Thesis: Track Me If You Can. Host: Nokia Research Center. Advisor: Prof. Jean-Pierre Hubaux.

B.S. in Computer Science, EPFL (GPA: 5.59/6) — Sep. 2006 - Jun. 2009

- Thesis: Secure SMS. Advisor: Prof. Jean-Pierre Hubaux.

EMPLOYMENT HISTORY

Research Group Leader, MPI-SWS — Nov. 2022 - Present

- Data Systems Group (DSG). Current: 2 graduate students, 1 MS student, 2 interns.
- Projects: Complex AI Systems (agentic infrastructure, LLM caching, code intelligence, LLM-enhanced databases), Learned Systems (benchmarking, updateable indexes), Graph Systems (large-scale GNN training, unified processing), Blockchain & Web3 (decentralized systems, analytics).

Postdoctoral Fellow, MIT CSAIL — Sep. 2020 - Nov. 2022

- Data Systems Group, Prof. Tim Kraska. Projects: Real-Time Graph Pattern Mining, Benchmarking Learned Systems.

Doctoral Assistant, EPFL — Sep. 2015 - Sep. 2020

- Operating Systems Laboratory (LABOS). Advisor: Prof. Willy Zwaenepoel. IT administrator since 2018.

Research Assistant, EPFL — Mar. 2014 - Aug. 2015

- LABOS. Technical coordinator for Data Center Observatory. Designer of Chaos graph processing system.

IT Consultant, Lobnek Wealth Management — Jul. 2013 - Feb. 2014

- Acting Head of IT. Modernized infrastructure, built interactive analytics, implemented data integration.

Co-Founder & VP Engineering, LakeMind — Aug. 2011 - Jun. 2013

- Cloud service troubleshooting startup. EPFL incubator. Venture Kick funded. Built event processing pipeline and ML algorithms.

Intern, Nokia Research Center — Jan. 2011 - Jul. 2011

- Built location privacy-preserving service prototype for Nokia-EPFL NIC Trial (~100 participants).

IT Pioneer, Swiss Armed Forces (Chief of Staff, 1st Army Region) — Jul. 2006 - Dec. 2018

PRIZES, AWARDS, FELLOWSHIPS

May 2025	**Associate Fellow,** University of Saarland
May 2020	**Early Postdoc.Mobility Fellowship,** Swiss National Science Foundation
Mar. 2020	**Best Presentation Award,** ASPLOS'20
Dec. 2017	**Teaching Assistant Award,** EPFL IC Faculty
Dec. 2017	**Public Prize Winner,** Exposure Science Movie Hackathon
Sep. 2015	**Ph.D. Fellowship,** EPFL EDIC
Jan. 2012	**Venture Kick 1st Round,** LakeMind

PUBLICATIONS

[ARCS '26] Rebooting Microreboot: Architectural Support for Safe, Parallel Recovery in Microservice Systems. [PDF]
L. Bindschaedler. *ARCS Conference.*

[DOLAP '26] Semantic Caching for OLAP via LLM-Based Query Canonicalization. [PDF]
L. Bindschaedler. *DOLAP Workshop.*

[DL4C '25] SQL-of-Thought: Multi-agentic Text-to-SQL with Guided Error Correction. [PDF]
S. Chaturvedi, A. Chadha, **L. Bindschaedler**. *DL4C Workshop.*

[EMNLP '25] Cache Saver: A Modular Framework for Efficient, Affordable, and Reproducible LLM Inference. [PDF]
N. Potamitis, L.H. Klein, B. Mohammadi, C. Xu, A. Mukherjee, N. Tandon, **L. Bindschaedler**, A. Arora. *EMNLP Conference.*

[RE4Web3 '25] A Computational Decision Support Workflow for Requirement Engineering in DAOs. [PDF]
Q. Botha, **L. Bindschaedler**, C. Siebenbrunner. *RE4Web3 Workshop.*

[RE4Web3 '25] A Requirements Analysis for a Decentralized Mathematics Prediction Market. [PDF]
Q. Botha, **L. Bindschaedler**, C. Siebenbrunner. *RE4Web3 Workshop.*

[HPDC '25] F3: An FPGA-accelerated FaaS Framework. [PDF]
C. Mainas, M. Lambeck, B. Scheufler, **L. Bindschaedler**, A. Koshiba, P. Bhatotia. *HPDC Conference.*

[GRADES-NDA '25] Everything You Wanted to Know About Graph Neural Network Partitioning (But Were Afraid to Ask). [PDF]
C. Xu, **L. Bindschaedler**. *GRADES-NDA Workshop.*

[DL4C '25] LoRACode: LoRA Adapters for Code Embeddings. [PDF]
S. Chaturvedi, A. Chadha, **L. Bindschaedler**. *DL4C Workshop.*

[EuroMLSys '25] May the Memory Be With You: Efficient and Infinitely Updatable State for Large Language Models. [PDF]
E. Chukwu, **L. Bindschaedler**. *EuroMLSys Workshop.*

[DOLAP '25] The Case for Instance-Optimized LLMs in OLAP Databases. [PDF]
B. Mohammadi, **L. Bindschaedler**. *DOLAP Workshop.*

[WSDM '25] Towards Reliable Latent Knowledge Estimation in LLMs: Zero-Prompt Many-Shot Based Factual Knowledge Extraction. [PDF]
Q. Wu, M.A. Khan, S. Das, V. Nanda, B. Ghosh, C. Kolling, T. Speicher, **L. Bindschaedler**, K. Gummadi, E. Terzi. *WSDM Conference.*

[EdgeSys '24] AlterEgo: A Dedicated Blockchain Node For Analytics. [PDF]
Q. Guo, M. Alizadeh, A. Falahati, **L. Bindschaedler**. *EdgeSys Workshop.*

[ICDE '23] Unshackling Database Benchmarking from Synthetic Workloads. [PDF]
P. Negi*, **L. Bindschaedler***, M. Alizadeh, T. Kraska, J. Leeka, A. Gruenheid, M. Interlandi. *ICDE Workshop.*

[CompAuto '22] Accurate Automatic Camera Calibration on Low-Quality CCTV Traffic Video Streams. [PDF]
A. Durai, S. Vempati, **L. Bindschaedler**. *CompAuto Conference.*

[EuroSys '21] Tesseract: Distributed, General Graph Pattern Mining on Evolving Graphs. [PDF]
L. Bindschaedler, J. Malicevic, B. Lepers, A. Goel, W. Zwaenepoel. *EuroSys (21% acceptance rate).*

[SMDB '21] Towards a Benchmark for Learned Systems. [PDF]
L. Bindschaedler, A. Kipf, T. Kraska, R. Marcus, U.F. Minhas. *SMDB Workshop.*

[ASPLOS '20] Hailstorm: Disaggregated Compute and Storage for Distributed LSM-based Databases. [PDF]
L. Bindschaedler, A. Goel, W. Zwaenepoel. *ASPLOS (18% acceptance rate).* ***Best Presentation Award.***

[THESIS] An Architecture for Load Balance in Computer Cluster Applications. [PDF]
L. Bindschaedler. *Doctoral Dissertation, EPFL.*

[EuroSys '18] Rock You Like a Hurricane: Taming Skew in Large Scale Analytics. [PDF]
L. Bindschaedler, J. Malicevic, N. Schiper, A. Goel, W. Zwaenepoel. *EuroSys (16% acceptance rate).*

[SOSP '15] Chaos: Scale-out Graph Processing from Secondary Storage. [PDF]
A. Roy, **L. Bindschaedler**, J. Malicevic, W. Zwaenepoel. *SOSP (17% acceptance rate).*

[REPORT] Benchmarking X-Stream and Graphchi. [PDF]
L. Bindschaedler, A. Roy. *Technical Report, EPFL.*

[PerCom '12] Big Brother Knows Your Friends: On Privacy of Social Communities in Pervasive Networks. [PDF]
I. Bilogrevic, M. Jadliwala, I. Lam, I. Aad, P. Ginzboorg, V. Niemi, **L. Bindschaedler**, J.-P. Hubaux. *PerCom Conference.*

[NDSS '12] Track Me If You Can: On the Effectiveness of Context-based Identifier Changes in Deployed Mobile Networks. [PDF]
L. Bindschaedler, M. Jadliwala, I. Bilogrevic, I. Aad, P. Ginzboorg, V. Niemi, J.-P. Hubaux. *NDSS (18% acceptance rate).*

[MobileHCI '11] Making Mobile Augmented Reality a Reality. [PDF]
L. Bindschaedler, H. Knoche, J. Huang. *MobileHCI Conference.*

SUPERVISION OF STUDENTS

Graduate Students

Jinhao Hu, **Bardia Mohammadi**

Affiliated Graduate Students

Qi Guo

Master Thesis

Parul Negi - Satellite Data Augmentation (Fall '24)

Julian Klein - LLMs with DuckDB (Fall '25)

Bachelor Thesis

Sascha Hägele - Strategic Slashing in TON (Fall '25)

Master Semester Projects

Mario Bucev - Graph Ingestion (Spring '19)

Vlad Haprian - Load Balancing for Chaos (Spring '16)

Diego Antognini - Decentralized Storage (Spring '16)

Junyao Zhao - HDFS for X-Stream (Summer '15)

Interns

Diego Rivera Correa - Relational Path Queries in Graphs (Summer '25)

E. I. Namuganga - Adversarial Benchmarking (Summer '24)

Bhumika Mittal - Graph Storage (Summer '24)

Saumya Chaturvedi - Multi-LoRA Selection (Summer '24)

Leshna Balara - Learned Index (Spring '24)

Mihir Trivedi - Satellite Data (2023-24)

Ali Falahati - AlterEgo (Summer '23)

Giorgos Kosmas - Learned Index (Summer '23)

Bardia Mohammadi - Systems for Complex AI (Summer '24)

Excel Chukwu - Updatable LLMs (Summer '24)

Pranay Borgohain - Scaling LLM Context (Summer '24)

Attreyee Mukherjee - AI Model Batching (Summer '24)

Abhinit Mahajan - Ghost Data (Spring '24)

Harsh Parikh - Satellite Data (2023-24)

Mahdi Alizadeh - AlterEgo (Summer '23)

Hardik Katehara - Graph Storage (Summer '23)

TEACHING ACTIVITIES

Lecturer, Operating Systems (OS2024) - MPI & UdS — Spring 2024
Undergraduate, ~50 students. Co-instructor.

Lecturer, Systems for Large Language Models - MPI & UdS — Spring 2023
Seminar, 12 students. Co-instructor.

Lecturer, Distributed Systems (DS2023) - MPI & UdS — Spring 2023
Undergraduate, ~50 students. Co-instructor.

Guest Lecturer, Real-time Systems (CS-321) - EPFL — Fall 2019
1-hour lecture on ContikiOS and protothreads. ~50 students.

Guest Lecturer, Operating Systems Introduction (CS-323) - EPFL — Spring 2018, 2019
2-hour lecture on Virtual Machines. ~100 students.

Head TA, Real-time Systems (CS-321) - EPFL — Fall 2019
Designed and led lab sessions. ~50 students.

Teaching Assistant, Operating Systems Intro & Implementation (CS-323/323a) - EPFL — Spring 2017-19
Team of 4 Ph.D. TAs. ~100 students (Intro), ~30 (Impl). Designed 4 mini-projects.

Teaching Assistant, Calculus III (MATH-203) - EPFL — Fall 2018
Team of 4 Ph.D. TAs coordinating ~20 undergraduate TAs. ~300 students.

Teaching Assistant, Information, Computation, Communication (CS-119) - EPFL — Fall 2016, 2017
Team of 4 Ph.D. TAs coordinating ~20 undergraduate TAs. ~200 students.

Head TA, System Oriented Programming (CS-207) - EPFL — Spring 2016
Coordinated 8 undergraduate TAs. ~150 students.

Student TA, Various Undergraduate Classes - EPFL — 2009-2011
Information Technology, Systems Programming, Software Engineering.

PROFESSIONAL SERVICE

Apr. 2027 **ERC** ASPLOS
Oct. 2026 **Organizer** HARNESS Tutorial (ACM SOSP)
Apr. 2026 **Reviewer** AI in the Wild (ICLR Workshop)
Jun. 2025 **PC** USENIX OSDI
Mar. 2025 **EPC** ASPLOS
Dec. 2024 **EPC** ACM/IFIP Middleware
Jun. 2024 **PC** USENIX OSDI
Apr. 2024 **PC** EuroMLSys
Mar. 2024 **PC** DOLAP
Dec. 2023 **PC** ACM/IFIP Middleware
Jul. 2023 **PC (Heavy)** USENIX ATC
Mar. 2023 **PC** ASPLOS
Jul. 2022 **PC (Heavy)** USENIX ATC
Nov. 2021 **PC** WAIN
Jul. 2021 **PC** USENIX ATC
Apr. 2021 **PC** EuroMLSys
Jul. 2020 **EPC** USENIX ATC
Feb. 2018 **EPC** ACM PPoPP

Apr. 2027 **PC** ACM EuroSys
Jul. 2026 **Reviewer** ICML
Mar. 2026 **PC** DOLAP
Mar. 2025 **PC** ACM EuroSys
Mar. 2025 **PC** DOLAP
Nov. 2024 **PC** ACM SOSP
Apr. 2024 **PC** ASPLOS
Apr. 2024 **PC** ACM EuroSys
Jan. 2024 **Reviewer** VLDB Journal
Oct. 2023 **Web Chair** ACM SOSP
May 2023 **PC** ACM EdgeSys
Feb. 2023 **Evaluator** FRQNT
Apr. 2022 **PC** EuroMLSys
Jul. 2021 **EPC** USENIX OSDI
Jun. 2021 **PC** ACM SYSTOR
Sep. 2020 **Reviewer** ACM TOCS
Apr. 2020 **PC Chair** 1st EuroGraph

TALKS

Oct. 2025	Client-Side Reuse for LLM Workflows	Purdue University
Nov. 2024	Virtualization and Virtual Machines	HES-SO
Nov. 2024	AlterEgo: A Dedicated Blockchain Node for Analytics	Saar Blockchain Meetup
Oct. 2024	Byzantine Fault Tolerance for Instant Payments	Saar Blockchain Meetup
Nov. 2023	Virtualization and Virtual Machines	HES-SO
Sep. 2023	When AI Works and Workers Adapt	SECO
May 2023	Introduction to Learned Index	MPI Lightning Talk
Mar. 2023	Machine Learning (m)eats Software	BWInf 2023
Oct. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	Aalborg U.
Apr. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	NTNU
Mar. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	Imperial
Mar. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	U. Amsterdam
Mar. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	Rochester U.
Mar. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	TU Munich
Mar. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	U. Reykjavik
Feb. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	U. Radboud
Feb. 2022	Designing Scalable, Interactive, and Autonomous Big Data Systems	MPI-SWS
Jun. 2021	Tesseract: Fast, Scalable Graph Pattern Mining	U. Sydney
May 2021	LOKI: Towards a Benchmark for Learned Systems	SMDB'21
Apr. 2021	Tesseract: Fast, Scalable Graph Pattern Mining	EuroSys'21
Mar. 2020	Hailstorm: Disaggregated Compute and Storage	ASPLOS'20
Oct. 2019	Tesseract: Fast, Scalable Graph Pattern Mining	U. Toronto
May 2019	Tesseract: Fast, Scalable Graph Pattern Mining	EcoCloud'19
Jun. 2018	Rock You Like a Hurricane: Taming Skew	EcoCloud'18
Apr. 2018	Rock You Like a Hurricane: Taming Skew	EuroSys'18
Oct. 2015	Chaos: Scale-out Graph Processing	SOSP'15
Jul. 2012	LakeMind: Making Cloud Service More Reliable	VentureKick'12
Jan. 2012	Track Me If You Can	NDSS'12
Sep. 2011	ARLO: Making Mobile AR a Reality	MobileHCI'11

LANGUAGE SKILLS

- **French** (Native)
- **English** (Fluent, C2) - Cambridge Certificate of Proficiency
- **German** (B2) - Zertifikat Deutsch

PERSONAL INTERESTS

- **Improvisational Theatre** - Founding member of l'Improsture (French-speaking Switzerland)
- **Chess** - Junior player in Geneva chess club, ELO-rated
- **Piano** - Classical and pop