

BOWEN WU

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Education

ETH Zürich

2023 – 2027 (Expected)

PhD Candidate in Computer Science

Zürich, Switzerland

- Supervised by Prof. Gustavo Alonso and Prof. Ana Klimovic.
- Build databases for heterogeneous computing platforms, including CPUs, GPUs, FPGAs, and advanced networking technologies (e.g., Infiniband, RoCE).
- Explore the intersection of GPU-accelerated data management systems and AI workloads.

ETH Zürich

2020 – 2023

MSc in Computer Science with distinction (GPA: 5.78/6)

Zürich, Switzerland

The Chinese University of Hong Kong

2016 – 2020

BSc in Computer Science, First Class Honor (major-GPA: 3.85/4)

Hong Kong, China

Work Experiences

Meta Platforms, Inc

May 2025 – Aug 2025

Software Engineer Intern

Menlo Park, USA

- Worked with Velox, a high-performance, open-source query execution engine.
- Prototyped a GPU-based reader for the Nimble file format, a replacement for Apache Parquet and ORC. The reader supports important features, such as decoding nested-encoded data, filter push-down, and data chunking.

Microsoft Gray Systems Lab

May 2024 – Aug 2024

Research Intern

Redmond, USA

- Researched and optimized distributed multi-GPU SQL query acceleration.
- Profiled and modeled heterogeneous interconnects (e.g., NVLink, PCIe, Ethernet) in GPU clusters to assess their impact on GPU-accelerated query execution.
- Proposed a novel approach to optimize data exchange over heterogeneous interconnects, significantly enhancing query execution efficiency in GPU clusters. A patent for this technique has been applied for.

Cablex AG (Swisscom)

Aug 2022 – Oct 2022

Database Analyst (Part-time)

Zürich, Switzerland

- Designed a unified relational data model to enable comprehensive data analysis across multiple business sections.
- Leveraged cloud technologies to digitize and modernize operational workflows.

Amazon Web Service

Sep 2021 – Feb 2022

Software Engineer Intern

Berlin, Germany

- Optimized the query rewriter for Redshift, petabyte-scale cloud data warehouse in AWS.
- Proposed a collection of rewriting algorithms for nested SQL queries and implemented them in Redshift using both C++ and a proprietary domain-specific language.
- Improved the performance significantly with my proposed algorithms on the tera-byte scale TPC-DS benchmark.

Publications

- **Bowen Wu***, Wei Cui*, Carlo Curino, Matteo Interlandi, Rathijit Sen “Terabyte-Scale Analytics in the Blink of an Eye”, <https://arxiv.org/abs/2506.09226>, to appear in VLDB 2026.
- Marko Kabić, **Bowen Wu**, Jonas Dann, Gustavo Alonso “Powerful GPUs or Fast Interconnects: Analyzing Relational Workloads on Modern GPUs”, VLDB 2025.
- Vasilis Mageirakos, **Bowen Wu**, Gustavo Alonso “Cracking Vector Search Indexes”, VLDB 2025.
- **Bowen Wu**, Dimitrios Koutsoukos, Gustavo Alonso, “Efficiently Processing Joins and Grouped Aggregations on GPUs,”, SIGMOD 2025.
- **Bowen Wu***, Chenyu Jiang*, Sanghamitra Dutta, Pulkit Grover, “An Information-Theoretic Measure for Enabling Category Exemptions with an Application to Filter Bubbles,” BIAS@ECIR2021.
- Hongzhi Chen, **Bowen Wu**, Shiyuan Deng, et al., “High Performance Distributed OLAP over Property Graphs with Grasper,” SIGMOD 2020 demo track.

Invited Talks

• Velox Tech Talk at Meta	9/26/2025
• Huawei Edinburgh Research Center	3/18/2025
• IBM Research Center	3/3/2025
• Microsoft Gray Systems Lab	6/4/2024

Selected Past Projects

Barrelfish Operating System	Feb 2022 – Jun 2022
<i>Advanced Operating System group project</i>	<i>ETH Zürich</i>
• Learned in-depth about the vast operating system design space, such as micro-kernel, capabilities, and scheduling. • Implemented core functions of Barrelfish operating system for armv8 architecture on QEMU and i.MX 8x SoC, which include memory management and paging, multi-threading, process spawning, multi-core support, intra-/inter-core communication, and a FAT-32 file system. Contributed ~6000 lines of C code individually. • Redesigned the intra-/inter-core communication to be non-blocking with queues, multi-threading, and (de-)multiplexing.	

Teaching

• Data Management Systems - (Head) Teaching Assistant & Invited Speaker	Autumn 2024, 2025
• Hardware Acceleration for Data Processing Seminar - Invited Speaker	Autumn 2024
• Data Modeling and Databases - Teaching Assistant	Spring 2024, 2025
• Information Systems for Engineers - Teaching Assistant	Autumn 2023

Technical Skills

Languages:	C/C++, CUDA, Python, Shell Script
Systems:	PyTorch, PostgreSQL, SQL Server
Frameworks:	MPI, NCCL, CUB, CuCollection, libcudf, Torch
Tools:	NSight System, NSight Compute
Topics:	GPU Programming, Databases, Distributed Systems, Cloud Computing, Systems for ML