HAMISH NICHOLSON

PhD Candidate

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TECHNICAL SKILLS

- **Programming Languages:** Proficient in C/C++ (14/17/20) and Python. Learning Rust. Experience in SQL, OCaml and Scala
- **Operating Systems:** Mac OS and Linux, particularly the Linux IO stack
- **Tooling:** LLVM, GDB, VTune, Perf, Nsight Compute, Nsight Systems, Git, Make, CMake, Bazel, AMD uProf/Intel PCM
- **Misc:** Excel and PowerPoint

EDUCATION

EPFL - École Polytechnique Fédérale de Lausanne
PhD. in Computer Science
September 2021 - Present
Lausanne, Switzerland

- **Tentative thesis:** Efficient Data-intensive Systems Through Adaptive Data Movement
- **Advisor:** Prof. Anastasia Ailamaki

Harvard University
A.B. with High Honors in Computer Science
September 2016 - May 2021
Cambridge, MA

- **Thesis**: *Psychophysical Evaluation of Deep Re-Identification Models*
- **Coursework:**
  - Data Systems, Machine Learning, Cloud Computing
  - Probability and Statistics
  - Abstract Algebra, Linear Algebra, Multivariable Calculus

EXPERIENCE

EPFL DIAS
Doctoral Assistant
September 2021 – Present
Lausanne, Switzerland

- Lead research on mitigating the data movement bottleneck for analytical query processing on modern heterogeneous hardware
- Mentor masters student research projects and theses
- Manage the lab's server infrastructure

Systems Research @ Google
Student Researcher
June 2023 – February 2024
Sunnyvale, California

- Conducted research at the intersection of computer architecture and database management systems
- Full-time June - September 2023, part-time September 2023 - February 2024.
- Nominated for and received a Peer Bonus for my work

Ocient
Software Engineer I/II
September 2020 – September 2021
Chicago, IL

- Transitioned the build system from Make to Bazel, accelerating developer productivity
- Worked on user access control and secondary index features

Fractal Computers (now Whist)
Software Engineer
May 2020 – August 2020
Cambridge, MA

- Developed a new build system for a multi-platform application
- Designed and built a continuous integration pipeline, significantly reducing the number of bugs deployed to production

Perceptive Automata
Data Science Intern
June 2019 – September 2019
Somerville, MA

- Integrated techniques from psychology and computer vision to better understand pedestrian re-identification performance under degraded conditions.

Jet Propulsion Laboratory - NASA
Data Science Intern
June 2018 – September 2018
Pasadena, CA

- Processed data from the Juno mission to analyze the upper atmosphere of Jupiter

PUBLICATIONS

- Hamish Nicholson, Konstantinos Chasialis, Antonio Boffa, and Anastasia Ailamaki (2025). "The Effectiveness of Compression for GPU-Accelerated Queries on Out-of-Memory Datasets". In: *International Workshop on Data Management on New Hardware, DaMoN '25, Berlin, Germany, 23 June 2025*. ACM. DOI: 10.1145/3736227.3736240.
- Hamish Nicholson, Periklis Chrysogelos, and Anastasia Ailamaki (Dec. 2023). "HPCache: Memory-Efficient OLAP through Proportional Caching Revisited". In: *The VLDB Journal*. ISSN: 0949-877X. DOI: 10.1007/s00778-023-00828-7.
- Hamish Nicholson, Andreea Nica, Aunn Raza, Viktor Sanca, and Anastasia Ailamaki (2023). "Chaosity: Understanding Contemporary NUMA-architectures". In: *Performance Evaluation and Benchmarking: 15th TPC Technology Conference, TPCTC 2023, Vancouver, BC, Canada, September 2, 2023*. Vancouver, BC, Canada. DOI: 10.1007/978-3-031-68031-1_5.

- Hamish Nicholson, Aunn Raza, Periklis Chrysogelos, and Anastasia Ailamaki (2023). "HetCache: Synergising NVMe Storage and GPU acceleration for Memory-Efficient Analytics". In: *13th Conference on Innovative Data Systems Research, CIDR 2023, Amsterdam, NL, January 8-11, 2023*. URL: https://www.cidrdb.org/cidr2023/papers/p84-nicholson.pdf.
- Hamish Nicholson, Periklis Chrysogelos, and Anastasia Ailamaki (2022). "HPCache: Memory-Efficient OLAP Through Proportional Caching". In: *International Workshop on Data Management on New Hardware, DaMoN '22, Philadelphia, PA, USA, 13 June 2022*. ACM. DOI: 10.1145/3533737.3535100.
- Mel McCurrie, Hamish Nicholson, Walter J. Scheirer, and Samuel E. Anthony (2020). "Modeling Score Distributions and Continuous Covariates: A Bayesian Approach". In: *2020 IEEE International Joint Conference on Biometrics, IJCB 2020, Houston, TX, USA, September 28 - October 1, 2020*. IEEE. DOI: 10.1109/IJCB48548.2020.9304938.

TALKS

- *Flash-based GPU-accelerated Queries*, HPTS 2022, Asilomar, USA, October 2022

SERVICE

- SIGMOD 2023 Availability Committee

TEACHING

EPFL

TA for Math-232: Probability and statistics — Fall 2023
TA for CS-460: Systems for data management and data science — Spring 2023/2024/2025
TA for CS-119g: Information, calculation, communication — Fall 2022
TA for CS-322: Introduction to database systems — Spring 2022

Harvard

Tutor for CS-51: Abstraction and design in computation — Spring 2018
CA for CS-50: Introduction to computer science — Fall 2017

HONORS AND AWARDS

- EPFL IC Teaching Assistant Award 2023
- EPFL IC Distinguished Service Award 2022
- EPFL EDIC Ph.D. Fellowship 2021

LANGUAGES

- **Fluent:** English
- **Elementary:** French

CITIZENSHIP

- **Australian**
- **American**
- **Canadian**