

Ben Karsin

Curriculum Vitae

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Education

- 2018 Ph.D. (Computer Science), *University of Hawaii at Manoa, Honolulu, HI*
Dissertation: “A Performance Model for GPU Architectures: Analysis and Design of Fundamental Algorithms”
Advisor: Nodari Sitchinava
- 2013 M.S. (Computer Science), *University of Hawaii at Manoa, Honolulu, HI*
Thesis: “Parallel XPath Query Evaluation on Multi-core Processors”
Advisors: Lipyew Lim and Henri Casanova
- 2006 B.S. (Computer Science, Math minor), *University of Hawaii at Hilo, Hilo, HI*

Professional Experience

- Université libre de Bruxelles** Brussels, BELGIUM
Postdoctoral Researcher (Host: John Iacono) July 2018 – Present
- University of Hawaii at Manoa** Honolulu, HI
Teaching Assistant (Advisor: Nodari Sitchinava) Jan. 2018 – May 2018
- University of Hawaii at Manoa** Honolulu, HI
Graduate Student Researcher (Advisor: Nodari Sitchinava) Jan. 2016 – Jan. 2018
- University of Hawaii at Manoa ITS Department** Honolulu, HI
Graduate Assistant Apr. 2011 – Dec. 2015
Software application developer focused on designing and implementing a metadata management system using software technologies such as Grails, Groovy, Java, Javascript, CSS, and others.
Supervisor: Michael Hodges

Research Interests

High-performance computing, parallel and GPU-efficient algorithms, cache-efficient and cache-oblivious models and algorithms, computational geometry. Also generally interested in Machine Learning, AI, and applying computing resources to solve diverse problems.

Relevant Skills

Skilled programmer with experience in C/C++, CUDA, Java, Python, Shell, Perl, SQL, PHP, Javascript, Groovy, CSS, and more.

Proficient with project management and efficiency tools such as Git, SVN, Eclipse, and IntelliJ IDEA.

Experienced at managing and maintaining servers, and using large-scale compute resources such as the University of Hawaii HPC Cluster.

Effective technical writer experienced with LaTeX, with several peer-reviewed publications.

Native English speaker and fluent in French.

Teaching and Lectures

- Université libre de Bruxelles* 2018
Lecture series “Advanced parallel algorithms: fundamentals and open problems”,
Provided an advanced lecture series on parallel algorithms for the research community at ULB.
- Teaching Assistant, University of Hawaii at Manoa* Spring 2018
ICS 311 “Algorithms” by Prof. Nodari Sitchinava. Assisted with “flipped” classroom teaching environment as well as grading.
- Guest Lecturer, University of Hawaii at Manoa* Fall 2017
ICS 443 “Parallel Algorithms” by Prof. Nodari Sitchinava.

Publications (* - authors listed in alphabetical order)

Refereed Conferences & Workshops

1. M. Gowanlock and B. Karsin, “Gpu accelerated similarity self-join for multi-dimensional data,” in *15th International Workshop on Data Management on New Hardware (DaMoN)*, 2019
2. M. Gowanlock, B. Karsin, Z. Fink, and J. Wright, “Accelerating the unacceleratable: Hybrid cpu/gpu algorithms for memory-bound database primitives,” in *15th International Workshop on Data Management on New Hardware (DaMoN)*, 2019
3. B. Karsin, V. Weichert, H. Casanova, J. Iacono, and N. Sitchinava, “Analysis-driven engineering of comparison-based sorting algorithms on gpus,” in *Proceedings of the 32nd International Conference on Supercomputing (ICS)*, 2018, pp. 86–95
4. *K. Berney, H. Casanova, A. Higuchi, B. Karsin, and N. Sitchinava, “Beyond binary search: Parallel in-place construction of implicit search tree layouts,” in *Proceedings of the 32nd IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2018, pp. 1070–1079
5. M. Gowanlock and B. Karsin, “Sorting large datasets with heterogeneous CPU/GPU architectures,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 2018, pp. 560–569
6. M. Gowanlock and B. Karsin, “GPU accelerated self-join for the distance similarity metric,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 2018, pp. 477–486
7. *P. Afshani, M. de Berg, H. Casanova, B. Karsin, C. Lambrechts, N. Sitchinava, and C. Tsirogianis, “An efficient algorithm for the 1d total visibility-index problem,” in *Proceedings of the 19th Workshop on Algorithm Engineering and Experiments (ALENEX)*, 2017, pp. 218–231
8. B. Karsin, H. Casanova, and L. Lim, “Low-latency xpath query evaluation on multi-core processors,” in *50th Hawaii International Conference on System Sciences (HICSS)*, 2017
9. B. Karsin, H. Casanova, and N. Sitchinava, “Efficient batched predecessor search in shared memory on gpus,” in *Proceedings of the 22nd IEEE International Conference on High Performance Computing (HiPC)*, 2015, pp. 335–344

Submitted and under review

10. *J. Iacono, V. Jayapaul, and B. Karsin, “Locality,” in *27th Annual European Symposium on Algorithms (ESA 2019)*, 2019
11. *J. Iacono, B. Karsin, and G. Koumoutsos, “External memory planar point location with fast updates,” in *27th Annual European Symposium on Algorithms (ESA 2019)*, 2019

Refereed Journals

1. M. Gowanlock and B. Karsin, “Hybrid cpu/gpu approach for optimizing sorting throughput,” *Parallel Computing (PARCO)*, vol. 85, pp. 45–55, 2019
2. *P. Afshani, M. D. Berg, H. Casanova, B. Karsin, C. Lambrechts, N. Sitchinava, and C. Tsirogiannis, “An efficient algorithm for the 1d total visibility-index problem and its parallelization,” *Journal of Experimental Algorithmics*, vol. 23, pp. 2.3:1–2.3:23, Jul. 2018

Submitted and under review

3. M. Gowanlock and B. Karsin, “Accelerating the similarity self-join using the gpu,” *Journal of Parallel and Distributed Computing (JPDC)*

Professional Service

Program Committee Service:

- ◇ 10th International Conference on Advances in Databases, Knowledge, and Data Applications (DBKDA), 2018
- ◇ 9th International Conference on Advances in Databases, Knowledge, and Data Applications (DBKDA), 2017

External Reviewer:

- ◇ Cluster Computing (CLUS)
- ◇ IEEE International Parallel and Distributed Processing Symposium (IPDPS)
- ◇ European Symposium on Algorithms (ESA)
- ◇ Workshop on Algorithm Engineering and Experiments (ALENEX)