

# 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), *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, PHP, Javascript, Groovy, Grails, CSS, and more.

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

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

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

Fluent in English and 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. 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
2. \*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
3. 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
4. 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
5. \*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
6. 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
7. 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**

8. 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
9. M. Gowanlock and J. W. Ben Karsin, Zane Fink, “Accelerating the unacceleratable: Hybrid cpu/gpu algorithms for memory-bound database primitives,” in *15th International Workshop on Data Management on New Hardware (DaMoN)*, 2019
10. \*J. Iacono, V. Jayapaul, and B. Karsin, “Locality,” in *The 46th International Colloquium on Automata, Languages and Programming (ICALP 2019)*, 2019
11. \*J. Iacono, B. Karsin, and G. Koumoutsos, “External memory planar point location with fast updates,” in *The Algorithms and Data Structures Symposium (WADS)*, 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)