

# Pedro Bruel | Researcher & Software Engineer

Performance Tuning & Modeling • Optimal Experimental Design

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## Experience

- 2017 – MAY 2020 **PhD Researcher**  
*Grenoble Informatics Laboratory  
University of Grenoble Alpes, France*  
Developing Design of Experiments  
Techniques for autotuning  
High-Performance Computing kernels  
and compilers on CPUs, GPUs and FPGAs
- 2015 – MAY 2020 **PhD Researcher**  
*Software Systems Laboratory  
University of São Paulo, Brazil*  
Developed autotuners for High-Level  
Synthesis compilers for FPGAs and for  
the CUDA Compiler using Search  
Heuristics
- 2015 – 2016 **PhD Research Collaborator**  
*Hewlett-Packard Enterprise  
University of São Paulo, Brazil*  
Developed an autotuner for the LegUp  
High-Level Synthesis compiler for Altera  
FPGAs
- 2012 – 2014 **Research Intern**  
*Computer Music Research Group  
University of São Paulo, Brazil*  
Maintained and developed a multiagent  
system for music composition via agent  
interaction

## Education

- 2015 – 2020 **PhD in Computer Science**  
*University of Grenoble Alpes, France  
University of São Paulo, Brazil*  
High-Performance Computing, Autotuning,  
Design of Experiments, Search Heuristics,  
Data Analysis
- 2010 – 2014 **BSc in Molecular Sciences**  
*University of São Paulo, Brazil*  
Multiagent Systems, Digital Signal  
Processing

## Skills

### Performance Tuning

Stochastic Search Heuristics  
Design of Experiments  
Optimal Experimental Design  
Performance Modeling  
Data Science

### Software Engineering

Python Julia R Bash  
C/C++ OpenMP MPI  
CUDA C Java

### Tools and Infrastructure

GNU/Linux Git Grid5000  
GCE/AWS Automated Testing  
Continuous Integration  $\LaTeX$

## Selected Publications

- Bruel, P.**, Goldman, A., Chalamalasetti, S.R. and Milojicic, D., **2017**. *Autotuning high-level synthesis for FPGAs using OpenTuner and LegUp*. In ReCon-Figurable Computing and FPGAs (ReConFig), 2017 International Conference on (pp. 1-6). IEEE.
- Bruel, P.**, Chalamalasetti, S.R., Dalton, C., El Hajj, I., Goldman, A., Graves, C., Hwu, W.M., Laplante, P., Milojicic, D., Ndu, G. and Strachan, J.P., **2017**. *Generalize or Die: Operating Systems Support for Memristor-based Accelerators*. In 2017 IEEE International Conference on Rebooting Computing (ICRC) (pp. 1-8). IEEE.
- Bruel, P.**, Amarís, M. and Goldman, A., **2017**. *Autotuning CUDA compiler parameters for heterogeneous applications using the OpenTuner framework*. Concurrency and Computation: Practice and Experience, 29(22), p.e3973.
- Bruel, P.**, Meirelles, P., Cobe, R., Goldman, A., **2017**. *OpenMP or Pthreads: Which is Better for Beginners?*. In 8th Workshop on Evaluation and Usability of Programming Languages and Tools (PLATEAU).
- Gonçalves, R., Amaris, M., Okada, T., **Bruel, P.** and Goldman, A., **2016**. *Openmp is not as Easy as it Appears*. In System Sciences (HICSS), 2016 49th Hawaii International Conference on (pp. 5742-5751). IEEE.
- Bruel, P.** and Queiroz, M., **2014**. *A Protocol for creating Multiagent Systems in Ensemble with Pure Data*. In International Computer Music Conference (ICMC).

## Languages

PORTUGUESE	Native
ENGLISH	CEFR C2
FRENCH	CEFR B2
SPANISH	CEFR A2