Cristián
Ramón-Cortés Vilarrodona

Ph.D. in Computer Architecture
Computer Sciences Engineer
Industrial Engineer

DNI: 53295906F
Birthdate: 19th October 1990
Birthplace: Barcelona, Catalonia, Spain
Address: Carrer l'Hort de la Vila, 30-34. 08017 Barcelona

My areas of interest are Distributed Computing, High Performance Computing (HPC), and Big Data Analytics (BDA). During my career at the Barcelona Supercomputing Center (BSC), I have been focused in programming models for distributed platforms, task-based workflows, dataflows, and streaming technologies. I have actively contributed to the design and development of COMPSs, PyCOMPSs, and PMES; mainly using Java and Python.

Personal Information

Phone: +34 687 860 612
E-mail: cristianrcv@gmail.com
Skype: cristian.rc.v
Website: cristianrcv.netlify.app
LinkedIn: linkedin.com/in/cristian-ramon-cortes
GitHub: github.com/cristianrcv
StackOverflow: stackoverflow.com/users/6018655/cristian-ramon-cortes
ORCID: orcid.org/0000-0003-4170-818X

Education

2020 **Doctor of Philosophy (Ph.D.) in Computer Architecture.**
Thesis Title: Programming models to support Data Science Workflows
Computer Architecture Department (DAC)
Universitat Politècnica de Catalunya (UPC)

2017 **Master of Science in Innovation and Research in Informatics (MIRI).**
Specialised in High Performance Computing (HPC)
Universitat Politècnica de Catalunya (UPC)

2014 **Diploma in double Bachelor and Master of Engineering**
Centre de Formació Interdisciplinaria Superior (CFIS)
Universitat Politècnica de Catalunya (UPC)

2014 **Bachelor and Master of Engineering in Industrial Engineering**
Escola Tècnica Superior d'Enginyeria Industrial de Barcelona (ETSEIB)
Universitat Politècnica de Catalunya (UPC)

2014 **Bachelor and Master of Engineering in Computer Sciences**
Facultat d'Informàtica de Barcelona (FIB)
Universitat Politècnica de Catalunya (UPC)

2008 **Primary, Secondary, and General Education**
AULA Escola Europea

Languages

Catalan ●●●●●
Spanish ●●●●●
English ●●●●○
French ●●●●○

Experience

October 2020 – May 2017 | **PhD Student, Barcelona Supercomputing Center (BSC), Spain**

PhD Student for the Computer Architecture Department (DAC - UPC) working in collaboration with the Workflows and Distributed Computing group (WDC) at the Barcelona Supercomputing Center (BSC). The thesis was entitled *"Programming Models to support Data Science Workflows"* and the main research lines are:

- Orchestration of Data Science workflows
- Automatic parallelisation of affine loops in Python
- Integration with Container technologies (e.g., Docker, Singularity, Mesos)
- Distributed execution of Hybrid Workflows composed of Task-based Workflows and Dataflows
- Integration of Streaming Technologies (e.g., Kafka) inside COMPSs

Java | Python | Bash | C++ | Maven | Eclipse | IntelliJ Idea

May 2017 – February 2016 | **Junior Developer, Barcelona Supercomputing Center (BSC), Spain**

Junior Developer at the Workflows and Distributed Computing (WDC) group at the Barcelona Supercomputing Center (BSC). My main tasks involved:

- Enhancement of the COMPSs infrastucture and deployment
- Design and implement several features inside the COMPSs Runtime

Java | Python | Bash | Maven | Eclipse | Jenkins | DEB packages | RPM packages

February 2016 – April 2014 | **Resident Student, Barcelona Supercomputing Center (BSC), Spain**

Resident Student at the Grid Computing group at the Barcelona Supercomputing Center (BSC). My main tasks involved:

- Build a testing infrastructure for COMPSs
- Re-design the COMPSs Monitor

Java | Python | Bash | Maven | Eclipse | Jenkins | ZK Framework | Apache Tomcat

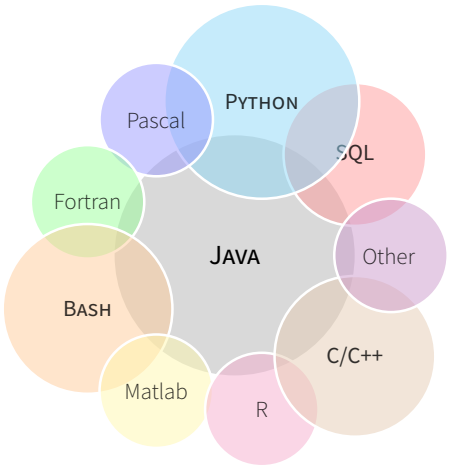
December 2013 – September 2011 | **Teacher in a Student Advise Service, Academia SOL, Spain**

Teacher of Bachelor and Master of Engineering students at the Academia SOL. The goal was to provide academic review and reinforcement in a simpler and closer way than the university professors. Taught subjects:

- ETSEIB: Heat Transfer, Informatics 1, Informatics 2
- EUETIB: Informatics
- FIB: Mathematics 2, Theory of Computation, Programming II

Python | C++ | Bash | Lazarus | Public Speaking

Programming Languages



Strengths

- Organised, methodical, and responsible
- Perfectionist, demanding, and ambitious
- Passionate, curious, and motivated
- Ease of learning
- Autonomous and teamwork
- Management and communication skills

Publications

A Programming Model for Hybrid Workflows: combining Task-based Workflows and Dataflows all-in-one

Cristian Ramon-Cortes, Francesc Lordan, Jorge Ejarque, Rosa M Badia
Future Generation Computer Systems (FGCS), The International Journal of e-Science
July 2020

doi.org/10.1016/j.future.2020.07.007

COMPSs | Task-based Workflows | Dataflows | Kafka | HPC | Distributed Computing

The impact of non-additive genetic associations on age-related complex diseases

Marta Guido-Martínez, Ramon Amela, et al.
bioRxiv
May 2020

biorxiv.org/2020.05.12.084608

COMPSs | Guidance | HPC | Distributed Computing

AutoParallel: Automatic parallelisation and distributed execution of affine loop nests in Python

Cristian Ramon-Cortes, Ramon Amela, Jorge Ejarque, Philippe Clauss, Rosa M Badia
The International Journal of High Performance Computing Applications (IJHPCA)
July 2020

doi.org/10.1177/1094342020937050

PyCOMPSs | PLUTO | Automatic Parallelization | HPC | Distributed Computing

AutoParallel: A Python module for automatic parallelization and distributed execution of affine loop nests

Cristian Ramon-Cortes, Ramon Amela, Jorge Ejarque, Philippe Clauss, Rosa M Badia
Proceedings of the 8th Workshop on Python for High-Performance and Scientific Computing (PyHPC 2018 - SC18)
November 2018

arxiv.org/abs/1810.11268

PyCOMPSs | PLUTO | Automatic Parallelization | HPC | Distributed Computing

Boosting Atmospheric Dust Forecast with PyCOMPSs

Javier Conejero, *Cristian Ramon-Cortes*, Kim Serradell, Rosa M. Badia
IEEE eScience 2018
September 2018

doi.org/10.1109/eScience.2018.00135

PyCOMPSs | NMMB-MONARCH | HPC | Distributed Computing | Big Data | Dust Prediction

Executing linear algebra kernels in heterogeneous distributed infrastructures with PyCOMPSs

Ramon Amela, *Cristian Ramon-Cortes*, Jorge Ejarque, Javier Conejero, Rosa M. Badia
2018 Oil and Gas Science and Technology - Revue d'IFP (OGST)
July 2018

doi.org/10.2516/ogst/2018047

PyCOMPSs | COMPSs | Matmul | QR | Cholesky | Linear Algebra | HPC | Distributed Computing

Transparent Orchestration of Task-based Parallel Applications in Containers Platforms

Cristian Ramon-Cortes, Albert Serven, Jorge Ejarque, Daniele Lezzi, Rosa M. Badia
2017 Journal of Grid Computing (JoGC)
December 2017

doi.org/10.1007/s10723-017-9425-z

COMPSs | Docker | Mesos | Singularity | Chameleon | HPC | Distributed Computing | Containers

Enabling Python to execute efficiently in heterogeneous distributed infrastructures with PyCOMPSs

Ramon Amela, *Cristian Ramon-Cortes*, Jorge Ejarque, Javier Conejero, Rosa M. Badia
Proceedings of the 7th Workshop on Python for High-Performance and Scientific Computing (PyHPC 2017 - SC17)
November 2017

doi.org/10.1145/3149869.3149870

PyCOMPSs | COMPSs | Matmul | QR | Cholesky | Linear Algebra | HPC | Distributed Computing

Master Thesis: Enabling Analytic and HPC Workflows with COMPSs

Cristian Ramon-Cortes
UPC Commons
May 2017

upcommons.upc.edu/handle/2117/111458

COMPSs | PyCOMPSs | MPI | Binary | HPC | Distributed Computing | Analytic Workflows | Task Flows | Orchestration

Transparent Execution of Task-Based Parallel Applications in Docker with COMP Superscalar

Victor Anton, *Cristian Ramon-Cortes*, Jorge Ejarque, Rosa M. Badia
2017 25th Euromicro International Conference on Parallel, Distributed and Network-based Processing (PDP)
March 2017

doi.org/10.1109/PDP.2017.26

COMPSs | Docker | Chameleon | HPC | Distributed Computing | Containers

COMP Superscalar, an interoperable programming framework

Rosa M. Badia, Jorge Ejarque, Daniele Lezzi, Raul Sirvent, Francesc Lordan, *Cristian Ramon-Cortes*, Javier Conejero, Carlos Diaz
Software X
December 2015

doi.org/10.1016/j.softx.2015.10.004

COMPSs | PyCOMPSs | HPC | Distributed Computing | Big Data

PFC: Design, implementation, and integration of a hand for a Darwin-OP robot.

Cristian Ramon-Cortes Vilarrodona
UPC Commons
November 2014

upcommons.upc.edu/handle/2099.1/25407

3D Printing | Darwin-OP | SolidWorks | C++ | Device programming | Robotics | Manipulators