




# Cristián RAMÓN-CORTÉS VILARRODONA









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



 DNI: 53295906F  
 Birthdate: 19th October 1990  
 Birthplace: Barcelona, Catalonia, Spain

My areas of interest are Distributed Computing, High Performance Computing (HPC), and Big Data Analytics (BDA). At Dynatrace, I focus on processing and aggregating session data for real user monitoring. However, during my career at the Barcelona Supercomputing Center (BSC), I have actively contributed to the design and development of programming models for distributed platforms, task-based workflows, dataflows, and streaming technologies. And yes, I love JVM-based languages!

## PERSONAL INFORMATION

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 LinkedIn: [linkedin.com/in/cristian-ramon-cortes](https://linkedin.com/in/cristian-ramon-cortes)  
 GitHub: [github.com/cristianrcv](https://github.com/cristianrcv)  
 StackOverflow: [stackoverflow.com/users/6018655/cristian-ramon-cortes](https://stackoverflow.com/users/6018655/cristian-ramon-cortes)  
 ORCID: [orcid.org/0000-0003-4170-818X](https://orcid.org/0000-0003-4170-818X)

## EDUCATION

2020	<b>Doctor of Philosophy (Ph.D.) in Computer Architecture.</b> <b>Thesis Title:</b> Programming models to support Data Science Workflows <b>Mark:</b> Excellent Cum Laude Computer Architecture Department (DAC) Universitat Politècnica de Catalunya (UPC)
2017	<b>Master of Science in Innovation and Research in Informatics (MIRI).</b> <b>Specialised in High Performance Computing (HPC)</b> Universitat Politècnica de Catalunya (UPC)
2014	<b>Diploma in double Bachelor and Master of Engineering</b> Centre de Formació Interdisciplinària Superior (CFIS) Universitat Politècnica de Catalunya (UPC)
2014	<b>Bachelor and Master of Engineering in Industrial Engineering</b> Escola Tècnica Superior d'Enginyeria Industrial de Barcelona (ETSEIB) Universitat Politècnica de Catalunya (UPC)
2014	<b>Bachelor and Master of Engineering in Computer Sciences</b> Facultat d'Informàtica de Barcelona (FIB) Universitat Politècnica de Catalunya (UPC)
2008	<b>Primary, Secondary, and General Education</b> AULA Escola Europea

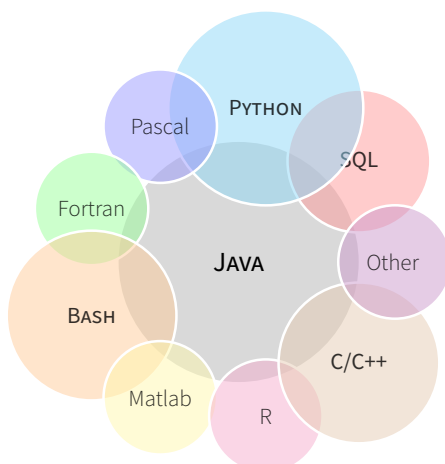
## LANGUAGES

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

## EXPERIENCE

Today October 2020	<b>Senior Software Engineer, DYNATRACE, Spain</b> As a Senior Software Engineer my efforts are focused on processing and aggregating session data for real user monitoring. I also joined an innovative team to develop the next generation storage for behavioural analysis. <div>JavaPythonBashCassandraElasticSearchSparkJupyterGradleIntelliJ</div>
October 2020 May 2017	<b>PhD Student, BARCELONA SUPERCOMPUTING CENTER (BSC), Spain</b> 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 " <i>Programming Models to support Data Science Workflows</i> " and the main research lines are: <ul style="list-style-type: none"><li>› Orchestration of Data Science workflows</li><li>› Automatic parallelisation of affine loops in Python</li><li>› Integration with Container technologies (e.g., Docker, Singularity, Mesos)</li><li>› Distributed execution of Hybrid Workflows composed of Task-based Workflows and Dataflows</li><li>› Integration of Streaming Technologies (e.g., Kafka) inside COMPSs</li></ul> <div>JavaPythonBashC++MavenEclipseIntelliJ</div>
May 2017 February 2016	<b>Junior Developer, BARCELONA SUPERCOMPUTING CENTER (BSC), Spain</b> Junior Developer at the Workflows and Distributed Computing (WDC) group at the Barcelona Supercomputing Center (BSC). My main tasks involved: <ul style="list-style-type: none"><li>› Enhancement of the COMPSs infrastructure and deployment</li><li>› Design and implement several features inside the COMPSs Runtime</li></ul> <div>JavaPythonBashMavenEclipseJenkinsDEB packagesRPM packages</div>
February 2016 April 2014	<b>Resident Student, BARCELONA SUPERCOMPUTING CENTER (BSC), Spain</b> Resident Student at the Grid Computing group at the Barcelona Supercomputing Center (BSC). My main tasks involved: <ul style="list-style-type: none"><li>› Build a testing infrastructure for COMPSs</li><li>› Re-design the COMPSs Monitor</li></ul> <div>JavaPythonBashMavenEclipseJenkinsZK FrameworkApache Tomcat</div>
December 2013 September 2011	<b>Teacher in a Student Advise Service, ACADEMIA SOL, Spain</b> 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: <ul style="list-style-type: none"><li>› ETSEIB: Heat Transfer, Informatics 1, Informatics 2</li><li>› EUETIB: Informatics</li><li>› FIB: Mathematics 2, Theory of Computation, Programming II</li></ul> <div>PythonC++BashLazarusPublic Speaking</div>

## 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

### A SURVEY ON THE DISTRIBUTED COMPUTING STACK

*Cristian Ramon-Cortes*, et al.  
COMPUTER SCIENCE REVIEW  
November 2021

[doi.org/10.1016/j.cosrev.2021.100422](https://doi.org/10.1016/j.cosrev.2021.100422)

Distributed systems Cloud computing Task-based Workflows Dataflows Graph Processing Streaming Data Sharing  
Resource Management Infrastructure managers

### THE IMPACT OF NON-ADDITIVE GENETIC ASSOCIATIONS ON AGE-RELATED COMPLEX DISEASES

Marta Guido-Martínez, Ramon Amela, et al.  
NATURE COMMUNICATIONS  
April 2021

[doi.org/10.1038/s41467-021-21952-4](https://doi.org/10.1038/s41467-021-21952-4)

GWAS GUIDANCE COMPSs

### ENABLING THE EXECUTION OF LARGE SCALE WORKFLOWS FOR MOLECULAR DYNAMICS SIMULATIONS

Pau Andrio, Adam Hospital, *Cristian Ramon-Cortes*, et al.  
BioRxiv  
April 2021

[doi.org/10.1101/2021.04.14.439795](https://doi.org/10.1101/2021.04.14.439795)

PyCOMPSs PyMDSetup Task-based Workflows

### PHD THESIS: PROGRAMMING MODELS TO SUPPORT DATA SCIENCE WORKFLOWS

*Cristian Ramon-Cortes*  
UPC COMMONS  
September 2020

[handle.net/2117/330142](https://handle.net/2117/330142)

Distributed Computing Analytic Workflows Task-based Workflows Dataflows Streaming Orchestration

### 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](https://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](https://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](https://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](https://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](https://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](https://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](https://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](https://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](https://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](https://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](https://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](https://upcommons.upc.edu/handle/2099.1/25407)

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