

# Abel Souza

## Curriculum Vitae

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Main challenges of my research lie on how to efficiently apply predictive analytic methods to process, profile, and model applications data in order to autonomously perform efficient resource management in datacenters following users' and operators' defined constraints.

### Education

- Feb 2015-May 2020 **PhD in Computer Science**, UMEÅ UNIVERSITY, Sweden,  
*Advisors: Johan Tordsson and Erik Elmroth.*
- Feb 2015-Dec 2018 **Ph Lic. in Computer Science**, UMEÅ UNIVERSITY, Sweden,  
*Advisors: Johan Tordsson and Erik Elmroth.*  
Licenciate Thesis: Application-Aware Resource Management for Datacenters
- Mar 2009-Dec 2014 **BSc. in Computer Science**, FLUMINENSE FEDERAL UNIVERSITY, Rio de Janeiro, Brazil.  
GPA – 3.0
- Jan-Dec 2012 **BSc. in Computer Science**, UNIVERSITY OF NEBRASKA-LINCOLN, Nebraska, USA.  
GPA – 3.25

### Awards

- 2019 **Umeå University, Sweden**  
Travel Award to attend CCGrid'19
- 2018 **Umeå University, Sweden**  
Travel Award to attend IC2E'18
- 2017 **Umeå University, Sweden**  
Award to intern for 1 semester at the Lawrence Berkeley National Lab (USA)
- 2015 **National Council for Scientific and Technological Development (CNPq), Brazil**  
Science Without Borders Doctorate studies scholarship
- 2012 **Coordination for the Improvement of Higher Education Personnel (CAPES), Brazil**  
Selected for the Science without Borders undergraduate USA-exchange program

### Publications

#### In Submission

- 2020 **The Extended Adaptive Cluster Co-Scheduling Algorithm.**

## Submitted

- 2020 **The Adaptive Scheduling Architecture**,  
INTERNATIONAL ACM SYMPOSIUM ON HIGH-PERFORMANCE PARALLEL  
AND DISTRIBUTED COMPUTING (HPDC'20).

## Published

- 2019 **Hybrid Resource Management for HPC and Data Intensive Workloads**,  
IEEE/ACM INTERNATIONAL SYMPOSIUM IN CLUSTER, CLOUD, AND GRID  
COMPUTING (CCGRID'19), Larnaca, Cyprus.
- 2018 **Application-Aware Resource Management for Datacenters**,  
UMEÅ UNIVERSITY, Umeå, Sweden.  
Licentiate Book Thesis
- 2018 **Hybrid Adaptive Checkpointing for Virtual Machine Fault Tolerance**,  
IEEE INTERNATIONAL CONFERENCE ON CLOUD ENGINEERING (IC2E'18),  
Orlando, FL, USA.  
Best Paper Nominee
- 2017 **E-HPC: a library for elastic resource management in HPC environments**,  
12TH WORKSHOP ON WORKFLOWS IN SUPPORT OF LARGE-SCALE SCIENCE  
(WORKS'17), Denver, CO, USA.
- 2016 **Data Analytics for Scheduling in Hybrid HPC Environments**,  
6TH INTERNATIONAL WORKSHOP ON CLOUD DATA AND PLATFORMS -  
CO-LOCATED WITH EUROSYS 2016, London, UK.
- 2015 **An Architecture for Large Scale Experiments in P2P Networks**,  
33RD BRAZILIAN SYMPOSIUM ON COMPUTER NETWORKS AND DIS-  
TRIBUTED SYSTEMS, Vitoria, ES, Brazil.  
Accepted Tool

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## Experience

### Research

- Jan-Sept 2017 **Affiliate**, LAWRENCE BERKELEY NATIONAL LABORATORY (LBNL), United States.  
Advisor: Dra. Lavanya Ramakrishnan
- Built a software library for enabling elasticity in Scientific Workflows in HPC systems
  - Research on I/O Ingestion Systems for supporting Real Time Stream Applications
- Apr 2015-May 2016 **Research Assistant**, UMEÅ UNIVERSITY, ORBIT - FP7 European Project.  
Advisors: Dr. Luis Tomas & Dr. Johan Tordsson
- Integration of a software orchestrator (LibVirt) with a hypervisor (QEMU)
  - Collaboration on an approach for automatically deciding on which type of fault tolerance mechanism to use, all based on techniques created for the Project.
- Aug 2013-Dec 2014 **Research Assistant**, FLUMINENSE FEDERAL UNIVERSITY, Brazil.  
Advisor: Dr. Eugene Vinod Rebello
- Developed a computational platform for Software Security Assurance
  - Research on new software security technologies and cryptosystems
  - Study and evaluation of metrics and techniques for parallelizing cryptographic algorithms

- Jan-Sept 2014 **Research Assistant**, NATIONAL LABORATORY FOR SCIENTIFIC COMPUTING (LNCC), Brazil.  
 Advisor: Dr. Antonio Tadeu Gomes
- Study and implementation of Finite Element Methods
  - Parallelization and optimization of different parts of a numerical solver code
- Oct 2013-Feb 2014 **Software Developer**, FLUMINENSE FEDERAL UNIVERSITY, Brazil.  
 Coordinator: Dra. Fabiana Rodrigues Leta
- Program visual geological systems using QT framework in C++
  - Document the system
  - Design programming patterns to optimize projects
- Jan-Mar 2013 **Research Assistant**, FLUMINENSE FEDERAL UNIVERSITY, Brazil.  
 Advisor: Dr. Antonio Augusto de Aragao Rocha
- Measured, collected and analyzed SOPCast network packets
  - Research about biostatistic models applied for estimating the size of SOPCast networks
- Oct-Dec 2012 **UNIX Programmer**, UNIVERSITY OF NEBRASKA-LINCOLN, United States.  
 Advisor: Dr. Fangrui Ma
- Constructed and maintained a High Performance Cluster for performing parallel programming computations
  - Developed secure LDAP databases used in user authentications
  - Created Shell Scripts for performing common tasks to facilitate the OS management
  - Documented all the HPC using and setup processes in an easy to understand format
- 2007-2011 **System Administrator**, FLUMINENSE FEDERAL UNIVERSITY, Brazil.  
 Advisor: Dr. Hamilton Faria Leckar
- Assist lead teacher in conducting increased learning experience for students in Linux
  - Delivered weekly lecture, helped design course lectures, held weekly TA sessions, and graded programming exams
  - Programed log-on, backup and visual mechanisms for Linux based operating systems in C/C++
  - Constructed and maintained LDAP and MySQL databases which connected users around colleges through Internet
  - Performed and maintained OS, software and hardware installs for 300 workstations
- Teaching**
- Nov 2019 - Jan 2020 **Teaching Assistant**, UMEÅ UNIVERSITY, Cloud Computing.  
 Responsible: Dra. Monica Vitalli
- Class lecturing, student help with assignments, grading, and project supervision
- Nov 2016 - Jan 2017 **Teaching Assistant**, UMEÅ UNIVERSITY, Operating Systems.  
 Responsible: Dr. Ahmed Aleyeldin
- Online TA, helping students with assignments and projects
- Jul-Dec 2013 **Teaching Assistant**, UNIVERSIDADE FEDERAL FLUMINENSE, Brazil.  
 Advisor: Dr. Hamilton Faria Leckar
- Prepared lecture materials used by students during lectures
  - Developed online platforms for sharing lecture materials
  - Delivered weekly lecture, helped design course lectures, held weekly TA sessions, and graded exams

### Peer Reviewing

- Oct. 2019 **IEEE Access**, SURVEY OF MEMORY MANAGEMENT TECHNIQUES FOR HPC AND CLOUD COMPUTING, *IEEE Access*.
- Sept. 2018 **IEEE SC2-2018**, CVEM: A CROSS-CHAIN VALUE EXCHANGE MECHANISM, 8th IEEE International Symposium on Cloud and Service Computing.
- Dec. 2017 **USCCS 2017**, AN EMPIRICAL STUDY OF EDGE LATENCY IMPACT ON PERFORMANCE OF MICRO-SERVICE APPLICATION, 21st Umeå Student Conference in Computing Science.
- Oct. 2016 **IEEE SC2-2016**, SUPERVISED LEARNING BASED APPROACH TO ASPECT BASED SENTIMENT ANALYSIS, 6th IEEE International Symposium on Cloud and Service Computing.
- Nov. 2015 **USCCS 2016**, EXPLORING THE DIFFERENCES IN PERFORMANCE BETWEEN GAMERS AND NON-GAMERS WHEN COMPLETING TASKS VIEWED FROM A THIRD-PERSON PERSPECTIVE, 20th Umeå Student Conference in Computing Science.
- Aug. 2015 **UCC 2015**, AN EFFICIENT AND PRIVACY-PRESERVING SIMILARITY EVALUATION FOR BIG DATA ANALYTICS, 8th IEEE/ACM International Conference on Utility and Cloud Computing.

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### Additional Development Coursework

- May 2018 **Mathematical Modeling**, UMEÅ UNIVERSITY, Sweden, 7.5 ECTS.
- Oct 2017 **Reinforcement Learning**, UPPSALA UNIVERSITY, Sweden, 6 ECTS.
- Aug 2017 **ICME Deep Learning Workshop**, STANFORD UNIVERSITY, USA.
- Aug 2015 **Introduction to High Performance Computing**, KTH ROYAL INSTITUTE OF TECHNOLOGY, Sweden, 7.5 ECTS.
- May 2015 **Big Data Analytic**, CHALMERS TECHNOLOGY UNIVERSITY, Sweden, 5 ECTS.

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### Extracurricular Activities

- 2015-2020 **Cloud Control Workshops ([cloudresearch.org/workshops](http://cloudresearch.org/workshops))**,  
*Organization and participation on series of workshops for exchanging distributed systems research with academic and industrial technology researchers and leaders from all around the world, Sweden.*
- 2015-2018 **Swedish e-Science Academy**,  
*Swedish national scientific meetings, Sweden.*
- 2016-2019 **Committee Member of the PhD Student Union Section**,  
*Umeå Science and Technology Union (NTK), Umeå University, Sweden.*
- 2016 **SCinet Student Volunteer - Super-computing Conference'16**,  
*Salta Lake City, USA, URL: [https://umu.se/en/news/volunteers-build-worlds-most-powerful-network\\_5842655](https://umu.se/en/news/volunteers-build-worlds-most-powerful-network_5842655)*

2016 **Collaborative LaTeX: An Introduction - 3rd Lunch Seminar - NTK PhD Branch,**  
*Umeå University, Sweden.*

2009–2011 **Specialization in Entrepreneurship Studies,**  
*Fluminense Federal University, Brazil, GPA – 3.3.*

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## Computer skills

Programming C/C++, JAVA, PL/SQL, PYTHON, R, BASH SCRIPTING and L<sup>A</sup>T<sub>E</sub>X  
Tools MS Visual Code, ViM, Spark, Kafka, MySQL, MongoDB

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## Languages

Portuguese	<b>Native</b>	
English	<b>Advanced</b>	<i>Con conversationally fluent</i>
Spanish	<b>Intermediate</b>	<i>Basic conversation, fluent reading and written skills</i>
Swedish	<b>Beginner</b>	<i>Some conversation and reading skills</i>