Curriculum Vitae - Sergio Castro
January 2015

Professional Objective

Research and application of advanced software engineering techniques for multi-paradigm programming, hybrid systems and programming languages integration.

Personal Data

Last Name: Castro
First Name: Sergio
Mobile: (++32) 4 85 93 46 59
E-mail: sergioc78@gmail.com
Nationality: Belgian / Ecuadorian (dual citizenship).
Place of residence: Brussels, Belgium.
Website &
Programming Portfolio: http://sergio-castro.github.com/

Education

Post-Graduate Studies

Université catholique de Louvain (UCL)   Louvain-la-Neuve – Belgium
PhD. in Engineering Sciences. Computer Science.
2014

Vrije Universiteit Brussel (VUB)   Brussels – Belgium
Ecole des Mines de Nantes (EMN)   Nantes – France
(double diploma program)
Master of Science in Computer Science: "*European Master in Object-, Component-, Aspect-, Oriented Software Engineering Technologies (EMOOSE)*".
Mention: Great Distinction.
2006

Ecole des Mines de Nantes   Nantes – France
Certificate of specialised formation in the field of Computer Science.
2006

Engineering Studies

Escuela Superior Politécnica del Litoral (ESPOL)   Guayaquil – Ecuador
Engineering degree in Electricity and Computer Science.
Specialisation in Information Technology Systems (ITS).
2004

Research Work

ARTICLES IN SCIENTIFIC MAGAZINES

S.CASTRO, K. MENS & P. MOURA. *Automatic Integration of Hybrid Java-Prolog Entities with Logi-cObjects*. Association for Logic Programming (ALP) Newsletter. Out of Left Field track. V. 27 N. 4. December Issue. 2014.

JOURNALS

S. CASTRO, K. MENS & P. MOURA. *JPC: A Library for Categorising and Applying Inter-Language Conversions Between Java and Prolog*. Science of Computer Programming: Experimental Software and Toolkits (EST 6). Elsevier North-Holland, Inc. (Under Evaluation).

S. CASTRO, C. De ROOVER, A. KELLENS, A. LOZANO & K. MENS. *Diagnosing and Correcting Design Inconsistencies in Source Code with Logical Abduction*. Science of Computer Programming: Special Issue on Software Evolution, Adaptability and Variability. V. 76 N. 12 P. 1113-1129. Elsevier North-Holland, Inc. 2011.

J. BRICHAU, A. KELLENS, S. CASTRO & T. D'HONDT. *Enforcing Structural Regularities in Software using IntensiVE*. Science of Computer Programming: Experimental Software and Toolkits (EST 3). V. 75. P. 232-246. Elsevier North-Holland, Inc. 2010.

CONFERENCES AND SYMPOSIUMS

S.CASTRO, K. MENS & P. MOURA. *Customisable Handling of Java References in Prolog Programs*. Proceedings of the International Conference on Logic Programming (ICLP) (ICLP 2014). Technical Communication. Computing Research Repository (CoRR). V. abs/1405.2693. Vienna, Austria. 2014.

S.CASTRO, K. MENS & P. MOURA. *LogicObjects: Enabling Logic Programming in Java Through Linguistic Symbiosis*. Proceedings of the 15th International Symposium on Practical Aspects of Declarative Languages (PADL 2013). V. 7752. P. 26-42. Springer Berlin Heidelberg. Rome, Italy. 2013.

S. CASTRO, J. FABRY, K. MENS & T. D'HONDT. *A Unified Mechanism for Improving Advanced Transaction Management in Web Services*. International Conference of the Chilean Computer Science Society (SCCC 2007). P. 30-39. Chilean Society of Computer Science. Iquique, Chile. 2007.

PUBLISHED WORKSHOP PAPERS

S. CASTRO. LogicObjects: A Portable and Extensible Approach for Linguistic Symbiosis between an Object-Oriented and a Logic Programming Language. International Conference on Logic Programming (Doctoral Consortium). Theory and Practice of Logic Programming (TPLP). Special Issue 04-05. V. 13. Istanbul, Turkey. 2013.

S. CASTRO, K. MENS & P. MOURA. *LogicObjects : A Linguistic Symbiosis Approach to Bring the Declarative Power of Prolog to Java.* Proceedings of the Workshop on Reflection, AOP and Meta-Data for Software Evolution (RAM- SE'12). Co-located with the European Conference in Object-Oriented Programming (ECOOP 2012). P. 11-16. Beijing, China. 2012.

S. CASTRO, S. GONZALEZ, K. MENS & M. DENKER. *DynamicSchema: A Lightweight Persistency Framework for Context-Oriented Data Management.* Proceedings of the Workshop on Context-Oriented Programming (COP'12). Co-located with the European Conference in Object-Oriented Programming (ECOOP 2012). Beijing, China. 2012.

S. CASTRO, A. KELLENS, C. De ROOVER & K. Mens. *Generation and Composition of Corrective Actions to Structural Design Problems in Code with Heal*. Proceedings of the 9th Belgian-Netherlands Software Evolution Seminar (BENEVOL 2010), Lille, France. 2010.

J. BRICHAU, A. KELLENS, S. CASTRO & T. D'HONDT. *Enforcing Structural Regularities in Software using IntensiVE*. International Workshop on Advanced Software Development Tools and Techniques (WASDeTT 2008). Co-located with the European Conference in Object-Oriented Programming (ECOOP 2008). Paphos, Cyprus. 2008.

S. CASTRO, J. BRICHAU & K. MENS. *Diagnosis and Semi-automatic Correction of Detected Design Inconsistencies in Source Code.* Proceedings of the International Workshop on Smalltalk Technologies (IWST 2009). Brest, France. 2009.

S.CASTRO, K. MENS & J. BRICHAU. *Towards a Taxonomy of Tools for Documenting Code Design*. Proceedings of the workshop on Query Technologies and Applications for Program Comprehension (QTAPC 2008). Co-located with the IEEE International Conference on Program Comprehension. (ICPC 2008). Amsterdam, The Netherlands. 2008.

Dissertations

PhD thesis

A Portable Approach for Bidirectional Integration between a Logic and a Statically-Typed Object-Oriented Programming Language.
Université catholique de Louvain, Belgium. September 2014.
Promoter: Prof. Dr. Kim Mens.
Jury:
Prof. Dr. Charles Pecheur (President).   UCL, Belgium
Prof. Dr. Anthony Cleve (Secretary).   UNamur, Belgium.
Prof. Dr. Paul Tarau.   University of North Texas, USA.
Dr. Jan Wielemaker.   Vrije Universiteit Amsterdam, the Netherlands.

Master thesis

ACTA Dependencies as a Unified Mechanism for Compensation, Activities Synchronization and Functional Replication in BPEL4WS.
Vrije Universiteit Brussel, Belgium. August 2006.
Promoter: Prof. Dr. Theo D'Hondt. Advisor: Prof. Dr. Johan Fabry.
Score: 18/20.

Engineering thesis

Analysis, Design and Implementation of a Code Generator System for the Interpretation of Distinct Call Detail Records (CDRs) Formats.
Escuela Superior Politécnica del Litoral, Ecuador. December 2004.
Promoter: Prof. Dr. Xavier Ochoa.
This software was conceived as the initial module of a complex Convergent Mediation system and was successfully deployed in an Ecuadorian Telecom company. The main technologies involved in the system were Java and XML related specifications.
Score: 10/10.

Open Source Projects & Programming Portfolio

- **Java–Prolog Connectivity (JPC)** (*https://github.com/java-prolog-connectivity/jpc*)
  JPC is a Java-Prolog interoperability library providing different levels of integration abstractions. One of the core JPC components consists of a module in charge of inter-language conversions between Java and Prolog artefacts. In many aspects, the implementation of this module is inspired by Google's Gson, a state of the art library for accomplishing conversions between Java and JSON artefacts.

- **LogicObjects** (*https://github.com/java-prolog-connectivity/logicobjects*)
  LogicObjects extends JPC by providing the necessary means for the automatic integration of hybrid Java and Prolog entities. In this way, routines between the two worlds can be invoked transparently and foreign language artefacts can be referenced as local ones.

- **JConverter** (*https://github.com/jconverter/*)
  JConverter generalises the inter-language conversion techniques originally defined in JPC. It defines an architectural pattern for accomplishing type-guided conversions between arbitrary artefacts in Java.

- **JGum** (*https://github.com/jgum/*)
  JGum allows to create and manipulate different kinds of categorisations in Java. With JGum, a programmer can define and manipulate ad hoc categorisations, as well as easily organise categories relying on existing Java categorisation mechanisms, such as classes and packages.

- **Heal** (*http://soft.vub.ac.be/SOUL/applications/heal-diagnose-and-correct-program-irregularities/*)
  Heal is a SOUL library for diagnosing and correcting design inconsistencies in Smalltalk by means of logic abductive reasoning and inter-language reflection.

Professional Experience

From September 2008 to September 2014
Université catholique de Louvain, Belgium. *(http://www.uclouvain.be/en-icteam.html*).

Role: Teaching and research assistant (**from 2007 to 2008** I had an academic grant).

Responsibilities: Ranged from developing and supervising exercises in situ for the students to the design and evaluation of homeworks and major projects.
The courses where I was assistant were part of the bachelor (in French) and master (in English) programs. They typically had 20 to 50 students registered.

Covered subjects: software metrics, logic programming, object-oriented programming design and implementation, requirements engineering, data structures and databases.

Programming languages and platforms: Smalltalk (Pharo and VisualWorks), Java, Android, and web development technologies.

From December 2006 to February 2007
Inter-American Center of Tax Administrations, Panama (*http://www.ciat.org/in/index.asp)*.

Role: Software consultant (programmer).

Project goal: Last stage of the implementation of a Customs software system for the Guatemala Government. Accelerated software development program.

Technologies involved: the project was related to JEE technologies and frameworks, Workflow Management and Business Document Administration.

From February 2002 to December 2004
Yoveri S.A., Ecuador *(http://yoveri.com/)*.

Role: Due to the outsourcing nature of this Ecuadorian company, I was involved in the design and implementation of software solutions for several Ecuadorian enterprises (mainly TELECOMS), some of them were:

LINKOTEL S.A. (from February 2004 to December 2004)
Implementation of a code generator system for the interpretation of distinct Call Detail Records (CDRs) formats. Since my employer and my university had cooperation programs, I developed this system both as part of my professional work and as my engineering thesis.

CONECEL S.A. (from October 2002 to January 2004)
Technical analysis, implementation leader and software cycle support for a CRM system based in N layers architecture. The involved technologies were: Oracle 9i Data Base and an OracleAS10G Application Server. The system was based on the JEE specification.

PACIFICTEL S.A. (from February 2002 to September 2002)
Implementation of billing applications using technologies and products related to Oracle like ORACLE DEVELOPER 6i and ORACLE DESIGNER. The work also involved the manipulation of huge volumes of data using PL/SQL programming and the development of C software modules.

Grants

DESAFIOS scholarship (http://www.becadesafios.com).
Scholarship offered to Latin American engineers to take part in Master degree programs in Europe.
Covered: EMOOSE master training tuition fees (10000 Euros).

Grant on the MoVES project sponsored by the Belgian Science Policy.
(*http://www.belspo.be/belspo/fedra/proj.asp?l=en&COD=P6/39).*
Covered: First fifteen months of my doctoral training.

Languages Competences

Language	Observation
English	Fluent (English spoken at home).
Spanish	Native.
French	Advanced reading skills. Upper-intermediate written and oral communication. (French speaking working environment).

Other Competences

- Strong background in software engineering in general and object-oriented programming in particular.
- Genuinely passionate and curious about software engineering research.
- Experience in several programming languages: Java, Prolog, Logtalk, Smalltalk, SQL, JavaScript. Some knowledge of Scala and previous experience (may need refreshing) in C, C++, PL/SQL.
- Quick learner of new programming languages and programming paradigms.
- Persistence, enthusiasm and imagination in solving nontrivial unstructured problems.
- Well-travelled international background and being used to work in a multi-cultural heterogeneous environment.

Personal Interests

I am often enthusiastic about backpacking and exploring the world. Interacting with new cultures and learning about different ways of perceiving life and interpreting reality are among my most valued memories.

References

Prof. Dr. Paul Tarau
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76203-5017, USA
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Vrije Universiteit Amsterdam
Phone: +31 624956034
E-mail: *jan@swi-prolog.org*
URL: http://www.cs.vu.nl/~janw/

Prof. Dr. Kim Mens (PhD advisor)
Université catholique de Louvain (UCL)
École Polytechnique de Louvain (EPL)
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B-1348 Louvain-la-Neuve, BELGIUM
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