

Luis F. Rivera

PHD STUDENT · RESEARCH & TEACHING ASSISTANT

Engineering/Computer Science Building (ECS) Room 412, Department of Computer Science, University of Victoria, British Columbia, Canada

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Research Interests

My research interests include (but are not limited to): Digital Twins, Models at Run-time, Model-Driven Engineering (MDE), Model-Driven Architecture (MDA), and Software Engineering at Run-Time.

Education

Ph.D. in Computer Science

UNIVERSITY OF VICTORIA

- GPA: 4.00/4.00
- Advisors: Hausi A. Müller, Norha M. Villegas
- Ongoing Research: Software Engineering for Digital Twins

Victoria, Canada
Sept. 2018 - PRESENT

M.Sc. in Informatics and Telecommunications

ICESI UNIVERSITY

- GPA: 4.00/4.00
- Advisors: Norha M. Villegas, Gabriel Tamura
- Thesis: UML-Driven Automated Software Deployment

Cali, Colombia
Jan 2016 - Aug 2018

B.Eng. in Software Systems

ICESI UNIVERSITY

- GPA: 3.37/4.00
- Advisor: Luis E. Munera
- Graduation Project: Vertical Fragmentation in DDBMS using Genetic Algorithms

Cali, Colombia
Jan 2010 - Aug 2015

Honors & Awards

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|------|--|---------------|
| 2019 | Winner of DITA Hackathon , IBM Canada & York University | Canada |
| 2019 | URMD Grad Cohort Travel Scholarship , Computing Research Association (CRA) | United States |
| 2018 | Doctoral Fellowship (full tuition scholarship) , University of Victoria | Canada |
| 2016 | Master's Degree Fellowship (full tuition scholarship) , Icesi University | Colombia |
| 2015 | Young Researcher Fellowship , Colombian Department of Science, Technology, and Innovation | Colombia |
| 2010 | Bachelor's Degree Scholarship (partial tuition scholarship) , Propal S.A. | Colombia |

Experience

RESEARCH EXPERIENCE

Graduate Research Assistant

UNIVERSITY OF VICTORIA

- Conduct research on Software Engineering (SE) for Digital Twins, Self-Adaptive Software Systems, and SE at Run-Time
- Disseminate research in academic conferences and journals
- Participate in software-related research projects in collaboration with the industry

Victoria, Canada
Sept 2018 - PRESENT

Research Assistant

COLOMBIAN CENTER FOR EXCELLENCY ON BIG DATA & DATA ANALYTICS (CAOBA ALLIANCE)

- Researched challenges regarding visualization of large volumes of data
- Researched machine learning algorithms for identifying financial communities in graph-based data
- Guided the application of software engineering practices for constructing a visualization prototype
- Participated in the development of a visualization prototype for financial communities

Cali, Colombia
Mar 2017 - Dec 2017

Graduate Research Assistant

Cali, Colombia

ICESI UNIVERSITY

Mar 2016 - Dec 2017

- Analyzed and proposed improvements to the available resources for deploying performance monitors for self-adaptive software systems
- Surveyed design and architectural patterns proposed in the domain of self-adaptive software
- Provided assistance in the evaluation of the research projects that were being conducted in the research group
- Researched challenges regarding the automation of the deployment process using Model-Driven Engineering practices and techniques

INDUSTRY EXPERIENCE

Software Developer

Cali, Colombia

TAILOR-MADE SOFTWARE DEVELOPMENT AREA (CMMI-DEV MATURITY LEVEL 5), CARVAJAL TECHNOLOGY AND

Jan 2015 - Dec 2015

SERVICES

- Participated in the elicitation and analysis of user requirements
- Performed detailed and unit test design
- Developed, integrated, and deployed software components
- Participated in multiple projects from different application domains such as *Sabi*, an instructional platform for primary and secondary education in Colombia; *Biometric Identifier*, a user enrollment platform and a generator of dynamic web forms; and *Horus*, a document manager for the administration of pension and retirement transactions

Freelance Software Developer

Cali, Colombia

TARJETAS4ESTACIONES

Jun 2013 - Sep 2013

- Developed an information system for a local company focused on personalized printing services

TEACHING AND MENTORING EXPERIENCE

Undergraduate Degree Project Supervisor

Victoria, Canada

UNIVERSITY OF VICTORIA - ICESI UNIVERSITY

Jan 2019 - Exp. Nov 2019

- Supervise a graduation project that involves the development of a smartwatch-based platform for gathering and processing health-care data

Capstone Project Supervisor

Victoria, Canada

DESIGN PROJECT II (SENG499), DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF VICTORIA

Jun 2019 - Aug 2019

- Supervised a multidisciplinary project involving the design and implementation of *BlueTape*, a smart measuring tape that allows users to take measurements for a clothing article seamlessly

Marking Teaching Assistant

Victoria, Canada

DATABASE SYSTEMS (CSC370), DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF VICTORIA

May 2019 - Aug 2019

- Participated in the marking process of assignments related to database modelling and management using PostgreSQL
- Instructor: Michael Zastre

Lab Lecturing & Marking Teaching Assistant

Victoria, Canada

FUNDAMENTALS OF PROGRAMMING WITH ENGINEERING APPLICATIONS (CSC111), DEPARTMENT OF COMPUTER

Sep 2018 - Dec 2018

SCIENCE, UNIVERSITY OF VICTORIA

- Lectured labs that covered fundamentals of C programming such as variables, data and control flow, functions, operators, expressions, libraries, pointers, I/O operations, and basics of data structures
- Participated in the marking process of midterms, assignments, and the final exam
- Instructor: Hausi A. Müller

Lecturing & Marking Teaching Assistant

Cali, Colombia

SOFTWARE ENGINEERING, DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGIES, ICESI UNIVERSITY

Jul 2016 - Jun 2018

- Using practical classes and field trips, helped students to consolidate the acquired knowledge in different areas of Software Engineering such as Requirements Engineering, Detailed Design, Quality Assurance, Configuration Management, Agile Development, and the Software Development Process
- Instructor: Norha M. Villegas

Lab Lecturing & Marking Teaching Assistant

Cali, Colombia

SOFTWARE DESIGN PATTERNS, DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGIES, ICESI

Jan 2017 - May 2017

UNIVERSITY

- Using practical exercises, taught students the use of creational, structural, and behavioral software design patterns for solving recurring problems when designing software systems
- Instructor: Javier Díaz-Cely

Publications

REFEREED CONFERENCE PROCEEDINGS

- [C,1] **Luis F. Rivera**, Miguel Jiménez, Prashanti Angara, Norha M. Villegas, Gabriel Tamura, and Hausi A. Müller. “Towards Continuous Surveillance and Personalized Medical Treatments in Precision Medicine through Digital Twins”. Submitted to the 29th Annual International Conference on Computer Science and Software Engineering (CASCON). IBM, 2019. Rank: B1 (Qualis) Acceptance rate: 27%.
- [C,2] Luis Berggrun, Juan Salamanca, Javier Díaz-Cely, César Loaiza, **Luis F. Rivera**, and Juan David Ospina. “Understanding and Visualizing Profitability and Money Propagation in Communities of Bank Clients”. Proceedings of the World Finance Banking Symposium. In Press. 2019.
- [C,3] **Luis F. Rivera**, Norha M. Villegas, Gabriel Tamura, Miguel Jiménez, and Hausi A. Müller. “UML-driven Automated Software Deployment”. In: Proceedings of the 28th Annual International Conference on Computer Science and Software Engineering (CASCON). IBM, 2018, pp. 257–268. Rank: B1 (Qualis) Acceptance rate: 27%.

REFEREED WORKSHOP PROCEEDINGS

- [W,1] Miguel Jiménez, **Luis F. Rivera**, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Nelly Bencomo. “An Architectural Framework for Quality-driven Adaptive Continuous Experimentation”. In: Proceedings of the IEEE/ACM Joint 4th International Workshop on Rapid Continuous Software Engineering and 1st International Workshop on Data-Driven Decisions, Experimentation and Evolution(RCoSE/DDrEE). In press. 2019.
- [W,2] Miguel Jiménez, **Luis F. Rivera**, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Pilar Gallego. “DevOps’ Shift-Left in Practice: An Industrial Case of Application”. In: Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment. Ed. by Jean-Michel Buel, Manuel Mazzara, and Bertrand Meyer. Springer, 2019, pp. 205–220.

Posters & Presentations

- [P,1] **Luis F. Rivera**, Norha M. Villegas, and Hausi Müller. Modelling Challenges of Digital Twins. Poster at Joint Consortium for Software Engineering Research (CSER) 2019 Spring Meeting and 2nd Software Engineering for Machine Learning Applications (SEMLA), Montréal, Québec, Canada. May 2019.
- [P,2] **Luis F. Rivera**, Norha M. Villegas, and Hausi Müller. A Vision for Digital Twin. Poster at 2019 CRA Grad Cohort Workshop for Underrepresented Minorities + Persons with Disabilities (CRA URMD), Waikoloa Village, Hawaii, United States. March 2019.
- [P,3] **Luis F. Rivera**, Norha M. Villegas, and Hausi Müller. MDA-Based Software Deployment. Poster at Consortium for Software Engineering Research (CSER) 2019 Fall Meeting, Markham, Ontario, Canada. October 2019.
- [P,4] **Luis F. Rivera**, Norha M. Villegas, and Gabriel Tamura. UML-Driven Automated Software Deployment. Poster at 12th Colombian Conference on Computing (CCC) Master and Doctoral Symposium, Cali, Valle del Cauca, Colombia. September 2017.

Skills

COMPUTER LANGUAGES & FRAMEWORKS

General Programming	Java, C#, C, SQL, R, Shell Script, Python, Go
Web Development	HTML5, CSS3, JavaScript, JQuery, .NET
Big Data	Hadoop, HDFS, YARN, Pig, Hive, Oozie, HCatalog, Cloudera
Infrastructure as Code	Terraform
Model-Driven Engineering	EMF (basic), UML2, Eclipse Acceleo (basic), Eclipse Papyrus (basic)
Other	LaTeX, Git, SVN, TFS, PSP (basic), TSP (basic), Visual Paradigm, Enterprise Architect, JUnit, JMeter

TECHNICAL SKILLS

Advanced	UML, Model-Driven Engineering, Model-Driven Architecture, Big Data Processing, Architecture Design, Object-Oriented Programming
Basic	Continuous Delivery, Data Mining, Infrastructure Provision

LANGUAGES

Fluent	English
Native	Spanish

References

Dr. Hausi A. Müller

University of Victoria

ASSOCIATE PROFESSOR AND DEAN OF RESEARCH

- Email: hausi@uvic.ca

Dr. Norha M. Villegas

Icesi University

DIRECTOR OF THE SOFTWARE SYSTEMS ENGINEERING PROFESSIONAL PROGRAM

- Email: nvillega@icesi.edu.co

Dr. Gabriel Tamura

Icesi University

ASSOCIATE PROFESSOR

- Email: gtamura@icesi.edu.co

Dr. Lorena Castaneda

CityView

SOFTWARE DEVELOPER

- Email: locastan@gmail.com