



# Paul Leger, Ph. D. in Computer Science

Associate Professor & Software Engineer  
Civil Engineering School  
Catholic University of the North  
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Pragmatics lab: <https://pragmaticslab.com> (Director)  
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## Personal

Name:	Paul Leger
Hometown:	Coquimbo, Chile
Nationality:	Chilean
<b>Summary:</b>	
Scholar:	CrqCdsgAAAAJ
ORCID:	0000-0003-0969-5139
SCOPUS:	36087550600
DBLP:	<a href="https://dblp.org/pid/78/7936.html">https://dblp.org/pid/78/7936.html</a>
Directors:	6 Positions
Indexed Journals:	35 Publications (30 WoS-JCR, 2 SCOPUS, and 3 Latindex)
Indexed Conferences:	17 Publications (SCOPUS)
Indexed Workshops:	7 Publications (SCOPUS)
Journal Editions:	6 Journals
Courses:	56 Courses (49 undergrad and 7 graduate)
Thesis Supervisions:	27 Theses (24 undergraduate and 3 graduate)
Software:	11 Developments (3 applications, 4 libraries, and 4 languages)



## Education

### Visiting Researcher, universities across the world:

- Centre for Development of Advanced Computing (C-DAC), India, 2024 (3 weeks).
- University of The Andes, Colombia, 2021 (3 weeks).
- Tokyo Institute of Technology, Japan, 2019 (6 months).
- University of Cauca, Colombia, 2018 (2 months).
- Shibaura Institute of Technology (x 2), Japan, 2013-2014 (4-2 months).
- École des mines de Nantes, France, 2010 (2 months).

### Certifications:

- “Fundamentals of English Medium Instruction”, University of Pennsylvania, 2023.
- “Teaching University”, Highest level, Catholic University of the North, 2024.

### Ph. D. in Computer Science, University of Chile, 2006 - 2012.

- Subject: Opening Up Trace-Based Mechanisms.
- Advisor: Éric Tanter (<https://pleiad.cl/etanter>).

### Engineering Degree in Computer Science, University of La Serena, 1999 - 2005 (July).

### B.Sc. in Computing Science, University of La Serena, 1999 - 2005 (April).

## Research Keywords

**Programming Languages.** Modularity, abstractions, different approaches, and from the functional programming to novel programming approaches.

**Software Engineering.** Developing tools to help programmers in software construction.

**Agent-Based Models.** The application of agent-based models to predict social behaviors in different environments (*e.g.*, social network sites like Twitter).

## Scientific Services

Manager (x 11)

- **Director on the Engineering School at UCN**, Coquimbo (Chile), 2023 - present, <https://www.ucn.cl>.
- **Pragmatics Lab. Founder and director of the research laboratory in software development and simulations of agent-based models**, Virtual (Chile), 2018 - present, <https://pragmaticslab.com>.
- **Performance Committee Evaluation for UCN academic units (x 2)**, Coquimbo (Chile), 2023 - 2024, <https://www.ucn.cl>.
- **Deputy Director in Engineering Systems Doctorate**, Coquimbo (Chile), 2023 - 2024, <https://dsi-en.ucn.cl>.
- **Research Secretary at the Engineering School**, Coquimbo (Chile), 2023 - 2024, <https://eic.ucn.cl>.
- **Ph. D. Coordinator of Engineering Systems Doctorate**, Coquimbo (Chile), 2023, <https://dsi-en.ucn.cl>.
- **Director(Head) of Civil Engineering in Computer Science at the Engineering School**, Coquimbo (Chile), 2021 - 2022, <https://eic.ucn.cl>.
- **Director(Head) of Technology Information Engineering at the Engineering School**, Coquimbo (Chile), 2021 - 2022, <https://eic.ucn.cl>.
- **Director on Chilean Computer Science Society (SCCC)**, Santiago (Chile), 2020 - 2022, <https://sccc.cl>.
- **Member of two Master Programs at the UCN**, Coquimbo (Chile), 2016 - 2018, <https://www.ucn.cl>.

Funded Projects (x 4)

- **Pluralismo 2023 (ANID-Chilean Government)** "Evaluación de Estrategias para Diseminar Noticias Falsas Usando Inteligencia Artificial (Assessment of Strategies to Disseminate Fake News Using Artificial Intelligence)" (PLU230018), Santiago (Chile), 2023 - 2024, NOTE: Principal Researcher, <https://anid.cl/concursos/xv-concurso-de-estudios-sobre-pluralismo-2023>.
- **Fondo de Tesis Investigación Científico-Tecnológica Pre y Postgrado:** "Evolución del Ecosistema de Haskell y el Uso de Monadas: Un Estudio Exploratorio de Stackage (An Exploratory Studies of the Evolution Haskell Ecosystem and Use of Monads)", Coquimbo (Chile), 2021 - 2022, NOTE: Principal Researcher, <https://www.ucn.cl>.
- **Fondef-VIU (ANID – Chile)** "Análisis y Valorización de Datos de Comportamiento del Usuario Captados Durante Visitas a Pilotos Inmobiliarios y Utilizando Realidad Virtual (Analysis and Evaluation of User Behavior Data Collected During Visits to Real Estate Pilot Projects and Using Virtual Reality)", Santiago (Chile), 2019, NOTE: Principal Researcher, <https://www.anid.cl/investigacion-aplicada/valorizacion-de-la-investigacion-en-la-universidad-viu>.
- **KAKENHI-Project (Japanese government)** "Software Engineering and Wireless Sensor Networks" (26330089), Tokyo (Japan), 2014 - 2018, NOTE: Co-Researcher, <https://kaken.nii.ac.jp/search/?kw=26330089>.

Organizer (x 4)

- **Jornadas Chilenas de la Computación (International Conference Chilean)**, Coquimbo (Chile), 2020, SCOPUS, <https://jcc2020.cl>.
- **Workshop on Context-Oriented Programming and Advanced Modularity (COP) - European Conference on Object-Oriented Programming (ECOOP)**, Virtual Event (Germany), 2020, SCOPUS, <https://2020.ecoop.org/home/COP-2020>.
- **Track on Modularization for Practical Software Engineering (MPSE) - International Conference on Bio-inspired Information and Communications Technologies**, New York (USA), 2015, SCOPUS, <https://bionetics.org>.
- **Track on Modularization for Practical Software Engineering (MPSE) - International Conference on Bio-inspired Information and Communications Technologies**, New York (USA), 2014, <https://bionetics.org>.

Journal Editor (x 5)

- **Associate Editor on Frontiers in Computer Science**, ISSN: 2624-9898, Frontiers, 2025 - present, JCR-WOS.
- **Editorial Member on Journal of Innovations in Digital Marketing**, ISSN: 2765-8341, Luminous Insights, 2021 - present.
- **Guest Editor on Information and Software Technology - Special Issue on Visualization applied to Software Engineering**, ISSN: 0950-5849, Elsevier, 2021, JCR-WOS.
- **Guest Editor on Frontiers in Computer Science - Special Issue on Artificial Intelligence for Software Engineering: Advances, Applications, and Implications**, ISSN: 2624-9898 - Frontiers, 2025, NOTE: 2025.
- **Guest Editor on International Journal of Software Engineering and Knowledge Engineering**, ISSN: 1793-6403, World Scientific, 2015, JCR-WOS.

Journal Reviewer (x 42)

- **Journal of Systems and Software**, ISSN: 0164-1212, ELSEVIER, 2025, JCR-WOS.
- **Frontiers in Computer Science**, ISSN: 2624-9898, Frontiers, 2024, JCR-WOS.
- **Journal of Software: Evolution and Process**, ISSN: 2047-7481, WILEY, 2024, JCR-WOS.
- **IEEE Transactions on Reliability**, ISSN: 0018-9529, IEEE, 2024, JCR-WOS.
- **IEEE Access (x 3)**, ISSN: 2169-3536, IEEE, 2022 - 2024, JCR-WOS.
- **International Journal of Information Systems and Supply Chain Management**, ISSN: 1935-5726, IGI Global Publishing, 2023, SCOPUS.
- **Tsinghua Science and Technology (x 2)**, ISSN: 1007-0214, SciOpen, 2023, JCR-WOS.
- **Proceedings of the Institution of Mechanical Engineers - Part C: Journal of Mechanical Engineering Science (x 3)**, ISSN: 0954-4062, Sage, 2022 - 2023, JCR-WOS.
- **Applied Sciences (x 3)**, ISSN: 2076-3417, MDPI, 2022 - 2023, JCR-WOS.
- **Security and Communication Networks**, ISSN: 1939-0122, Hindawi, 2022, JCR-WOS.
- **Informatics for Health and Social Care**, ISSN: 1753-8157, IEEE, 2022, JCR-WOS.
- **Complexity (x 2)**, ISSN: 1076-2787, Hindawi, 2022, JCR-WOS.
- **Transactions on Consumer Electronics**, ISSN: 0098-3063, IEEE, 2022, JCR-WOS.
- **Education Research International**, ISSN: 2090-4002, Hindawi, 2022, SCOPUS.
- **International Journal of Computer Games Technology**, ISSN: 1687-7047, Hindawi, 2022, SCOPUS.
- **Journal of Simulation (x 2)**, ISSN: 1747-7778, Taylor and Francis, 2019 - 2022, JCR-WOS.
- **IEEE Latin America Transactions (x 8)**, ISSN: 1548-0992, IEEE, 2018 - 2022, JCR-WOS.

- **Ingeniería y Competitividad**, ISSN: 0123-3033, University of the Valley, 2021, SCIELO-COLOMBIA.
- **Journal of Computer Languages (x 2)**, ISSN: 2590-1184, Elsevier, 2020, JCR-WOS.
- **Soft Computing**, ISSN: 1432-7643, Springer, 2019, JCR-WOS.
- **Ingeniare (x 2)**, ISSN: 0718-3305, Universidad de Tarapacá, 2018, SCOPUS.
- **Formación Universitaria**, ISSN: 0718-5006, CIT, 2018, SCOPUS.
- **Spanish Journal of Marketing**, ISSN: 2444-9709, Emerald, 2017, SCOPUS.
- **Journal of Technology Management & Innovation**, ISSN: 0718-2724, Universidad Alberto Hurtado, 2015, SCOPUS.

Chair (x 9)

- **Industry Track on IEEE International Conference on Software Maintenance and Evolution (ICSME)**, Bogota (Colombia), 2023, SCOPUS, NOTE: Core-Rank A, <https://conf.researchr.org/home/icsme-2023>.
- **Lo Mejor de lo Nuestro (LMN) ("the best of ourselves")**, Santiago (Chile), 2022, SCOPUS, <https://jcc2022.ing.puc.cl/lmn2022>.
- **International Conference of the Chilean Computer Science Society (SCCC)**, Coquimbo (Chile), 2021, SCOPUS, NOTE: Flagship national CS conference (Chile), <https://jcc2021.cl>.
- **Context-Oriented Programming and Advanced Modularity (COP)**, Virtual Event (Germany), 2020, SCOPUS, <https://2020.ecoop.org>.
- **Session Chair on Track on Software Engineering (SE)-ACM Symposium on Applied Computing (SAC)**, Marrakech (Morocco), 2017, SCOPUS, <https://selab.uos.ac.kr/sacse17>.
- **Track on Modularization for Practical Software Engineering (MPSE) - International Conference on Bio-inspired Information and Communications Technologies (x 3)**, Boston (USA), 2014 - 2016, SCOPUS, <https://bionetics.org>.
- **Publicity Chair on 9th International Conference on Bio-inspired Information and Communications Technologies**, New York (United States), 2015, SCOPUS, <https://bionetics.org>.

Program Committee Member (x 20)

- **(SPLASH) 2025 Workshop on Virtual Machines and Language Implementations**, Singapore, 2025, SCOPUS, <https://conf.researchr.org/home/icfp-splash-2025/vmil-2025>.
- **International Conference on Software Maintenance and Evolution (ICSME) - Industry Track**, Auckland (New Zealand), 2025, SCOPUS, <https://conf.researchr.org/track/icsme-2025/icsme-2025-industry-track>.
- **XXVI International Marketing Congress (AEMARK)**, Murcia (Spain), 2025, <https://aemarkcongresos.com/areas-tematicas-y-comite-cientifico>.
- **International Conference on Software Technologies (ICSOFT)**, Bilbao (Spain), 2025, SCOPUS, <https://icsoft.scitevents.org/ProgramCommittee.aspx>.
- **International Conference on Software Technologies (ICSOFT)**, Dijon (France), 2024, SCOPUS, <https://icsoft.scitevents.org/ProgramCommittee.aspx>.
- **Brazilian Symposium on Programming Languages (SBLP)**, Mato Grosso do Sul (Brazil), 2023, SCOPUS, <https://cbsoft2023.ufms.br/en-US/sblp>.
- **Brazilian Symposium on Programming Languages (SBLP)**, Virtual Event (Brazil), 2022, SCOPUS, <https://cbsoft2022.facom.ufu.br/sblp.php>.
- **Context-Oriented Programming and Advanced Modularity (COP)**, Berlin(Germany), 2022, SCOPUS, <https://2022.ecoop.org/home/COP-2022>.
- **Brazilian Symposium on Programming Languages (SBLP)**, Natal (Brazil), 2020, SCOPUS, <https://cbsoft2020.imd.ufrn.br/sblp.php>.

- **Congreso Internacional de Computación e Informática del Norte de Chile (INFONOR) (x 6)**, Norte de Chile (Chile), 2013 - 2019, <https://infonorchile.cl>.
- **ACM Symposium on Applied Computing (SAC) - Track on Software Engineering (SE)**, Pau (France), 2018, SCOPUS, <https://www.sigapp.org/sac/sac2018>.
- **ACM Symposium on Applied Computing (SAC) - Track on Software Engineering (SE)**, Marrakech (Morocco), 2017, SCOPUS, <https://www.sigapp.org/sac/sac2017>.
- **ACM Symposium on Applied Computing (SAC) - Track on Software Engineering (SE)**, Pisa (Italy), 2016, SCOPUS, <https://www.sigapp.org/sac/sac2016>.
- **ACM Symposium on Applied Computing (SAC) - Track on Software Engineering (SE)**, Salamanca (Spain), 2015, SCOPUS, <https://www.sigapp.org/sac/sac2015>.
- **New Ideas or Emerging Results (NIER) and Tool Demo (TD) - Third IEEE Working Conference on Software Visualization (VISSOFT)**, Santiago (Chile), 2015, <https://vissoft.dcc.uchile.cl>.

Evaluator (x 14)

- **President of the Ph.D thesis commission: "Integrated Mathematical Models for Agricultural Decision-Making Under Uncertainty: Efficiency; Water Optimization and Resilience in Olive Production."**, Universidad Católica del Norte (Chile), 2025, <https://www.ucn.cl>.
- **Evaluator of Fondef-IDeA Projects (x 3)**, ANID (Chile), 2023 - 2025, <https://anid.cl/concursos/concurso-idea-id-tecnologias-avanzadas-2025/2025>.
- **President of the Ph.D thesis commission: "Diversidad de Licencias en Software Libre"**, Universidad Rey Juan Carlos (Spain), 2024, <https://en.urjc.es>.
- **External Reviewer of Master Thesis: "Keen: Kotlin Genetic Algorithms Framework"**, University of Chile (Chile), 2024, <https://www.uchile.cl>.
- **Evaluator of Exploration Projects**, ANID (Chile), 2022, <https://www.anid.cl/proyectos-de-investigacion/proyectos-de-exploracion>.
- **External Reviewer of Master Thesis: "Points-to Analysis for Context-Oriented JavaScript Programs"**, University of the Andes (Colombia), 2022, <https://uniandes.edu.co/en>.
- **External Reviewer of Master Thesis: "Ad Hoc Systems Management and Specification with Distributed Petri Nets"**, University of the Andes (Colombia), 2021, <https://uniandes.edu.co/en>.
- **External Reviewer of Master Thesis: "Analysis of WebRTC signaling"**, University of the Andes (Colombia), 2021, <https://uniandes.edu.co/en>.
- **Research Project**, Pontificia Universidad Católica de Valparaíso (Chile), 2018, <https://www.pucv.cl>.
- **External Reviewer of Master Thesis: "Verificación progresiva de programas en Dafny"**, Pontificia Universidad Católica de Valparaíso (Chile), 2018, <https://pucv.cl>.
- **External Reviewer of Master Thesis: "Discovering Memory Optimization Opportunities by Analyzing Shareable Objects"**, University of Chile (Chile), 2017, <https://www.uchile.cl>.
- **Evaluator on Short Internship Projects (MEC)**, ANID (Chile), 2014, <https://www.conicyt.cl/pai>.

## Academic Experience

*Lecturer*

Postgraduate (x 7)

**Applied Research Practice**, Doctorate of Engineering System, Catholic University of the North, 2024.

**Thesis Proposal**, Master Program, Catholic University of the North, 2019 - 2021.

**Advanced Topics in Management of Information Technology II**, Master Program, Catholic University of the North, 2020.

**Advanced Topics in Management of Information Technology I**, Master Program, Catholic University of the North, 2019.

**Research Methodology**, Master Program, Catholic University of the North, 2018.

**Design Patterns**, Computer and Telecommunication Engineering, Diego Portales University, 2011.

**Objects and Aspects**, Computer and Telecommunication Engineering, Diego Portales University, 2010.

Undergraduate (x 48)

**Programming Languages (x 8)**, Computer Civil Engineering, Catholic University of the North, 2021 - 2025.

**Complex Engineering Problems (x 3)**, Information and Information Technology, Catholic University of the North, 2024 - 2025.

**Data Structure (x 5)**, Computer Civil Engineering, Catholic University of the North, 2018 - 2021.

**Agent-Based Model for Social Simulation (Guided Research)**, Computer Civil Engineering, Catholic University of the North, 2021.

**Algorithms and Programming**, Engineering, Catholic University of the North, 2020.

**Applied Science Project**, Computer Civil Engineering, Catholic University of the North, 2020.

**Data Science Application to the use of Programming Languages (Guided Research)**, Computer Civil Engineering, Catholic University of the North, 2020.

**Introduction to Research in Computer Science**, Computer Civil Engineering, Catholic University of the North, 2019.

**Communication Elements (x 5)**, Information and Management Control, Catholic University of the North, 2014 - 2018.

**Management Information System Development**, Information and Management Control, Catholic University of the North, 2018.

**DataBase (x 4)**, Information and Management Control, Catholic University of the North, 2013 - 2017.

**Process Modelling (x 3)**, Information and Management Control, Catholic University of the North, 2013 - 2016.

**Programming (x 3)**, Information and Management Control, Catholic University of the North, 2013 - 2016.

**Programming (x 5)**, Industrial Civil Engineering, Diego Portales University, 2010 - 2012.

**Programming and Database**, Business Management, Catholic University of the North, 2012.

**Programming Languages and Paradigms**, Computer Civil Engineer, University of Talca, 2012.

**Advanced Programming**, Industrial Civil Engineering, Diego Portales University, 2010.

**Computing 1 (x 3)**, Computer and Telecommunication Engineering, Diego Portales University, 2009.

Thesis Advising (x 27)

**Postgraduate (x 3)**, Ph. D and Master, Catholic University of the North, 2017 - 2025.

**Undergrad (x 24)**, Engineering, Catholic University of the North, 2013 - 2025.

### *Evaluations as Professor*

**Catholic University of the North** (Three consecutive times) Best professor evaluation for undergrad teaching in School of Business Studies, 2012 - 2014.

**Diego Portales University** (Spanish) "Paul dictó varios cursos (incluso cursos de postgrado) en nuestra carrera, él mostró cercanía con los alumnos y capacidad suficiente para motivarlos a interiorizarse en la materia", Jonathan Frez (jonathan.frez@udp.cl), Teaching Management, of School of Computer Science and Telecommunications Engineer telecommunications.

**University of Talca** (Spanish) "Vistos los resultados de la encuesta, el prof. Leger obtiene puntaje por sobre el promedio del Departamento y de la Facultad en cada uno de los ítems de la encuesta...". Ruth Garrido (rgarrido@utalca.cl), Head of School of Computer Science Engineer.

## Publications

My research profile IDs are ORCID (0000-0003-0969-5139), Web of Science (Q-6174-2017), and Scopus (36087550600).

NOTE: For conferences/workshops, I use the CORE ranking, which belongs COmputing REsearch and Education Association of Australasia (near to the publication year). CORE is available on <http://portal.core.edu.au/conf-ranks>.

### Journals (Indexed)

- Canquil, Diego, Daniel SanMartín, Irene Inequio-Renteria, and Paul Leger (Jan. 2026). "A Systematic Literature Review on Machine Learning Techniques for Predicting Household Water Consumption". In: *Water Resources Management* 40.2, p. 83. doi: 10.1007/s11269-026-04496-4. **JCR-WOS**.
- Abdi, Farshid, Shaghayegh Abolmakarem, Amir Karbassi-Yazdi, Paul Leger, Yong Tan, and Giuliani Coluccio (Jan. 2025). "Predicting Patients' Revisit Intention Based on Satisfaction Scores: Combination of Penalized Regression and Neural Networks". In: *IEEE ACCESS* 13, pp. 2783–2800. doi: 10.1109/ACCESS.2024.3522767. **JCR-WOS**.
- Karbassi, Amir, Yang Tan, and Paul Leger (Jan. 2025). "Clustering Financial Institutions in Countries Based on a Hybrid Random Forest and Induced Ordered Weighted Averaging". In: *Journal of Management Analytics*, pp. 1–30. doi: 10.1080/23270012.2025.2454674. **JCR-WOS**.
- Terán, Oswaldo, Paul Leger, and Manuela López (Apr. 2025). "Factors that Drive Market Share and the Oligopolistic Character of Cross-border B2C Ecommerce: An agent-based scenario analysis approach". In: *Simulation: Transactions of the Society for Modeling and Simulation International* o.o, pp. 1–24. doi: 10.1177/00375497241296542. **JCR-WOS**.
- Junior, Paulo Nocera Alves, Paul Leger, and Isotilia Costa Melo (Oct. 2024). "Efficiency Analysis of Engineering Classes: A DEA Approach Encompassing Active Learning and Expositive Classes Towards Quality Education". In: *Environmental Science & Policy* 160, p. 103856. doi: 10.1016/j.envsci.2024.103856. **JCR-WOS**.
- Leger, Paul, Hiroaki Fukuda, Nicolás Cardozo, and Daniel San Martín (Jan. 2024). "Exploring a Self-replication Algorithm to Flexibly Match Patterns". In: *IEEE ACCESS* 12, pp. 13553–13570. doi: 10.1109/ACCESS.2024.3355319. **JCR-WOS**.
- B, B. Arinze, DA. Buell, P. Cabezas, JD. Caddell, J. Chase, Y. Chen, E. Chi, SJ. Cosgrove, M. Dabkowski, D. DeVasto, B. Duong, N. Elliot, TS. Ellis, M. Feuer, E. Friess, PB. Gallagher, JF. George, V. Gerard, M. Gertrudix Barrio, G. Getto, G. Giordano, C. Gupta, M. Gupta, V. Gupta, GF. Hayhoe, C. Hidalgo-Alcazar, A. Houser, C. Hubka, KM. Jacobsen, I. Kloo, D. Kong, SJ. Kowalewski, JT. Labriola, A. Lancaster, S. Lang, C. Lauer, J. Lee, Paul Leger, CC. Lewis, C. Liles, and E. Londner (Dec. 2023). "2023 Index IEEE Transactions on Professional Communication Vol. 66". In: *IEEE Transactions on Professional Communication* 66.4, pp. 1–6. doi: 10.1109/tpc.2023.3338309. **OTHER INDEXES**.
- Leger, Paul, Alexandre Bergel, Juan Pablo Sandoval Alcocer, and Leonel Merino (Mar. 2023). "Introduction to Special Issue on Visualization Applied to Software Engineering". In: *Information and Software Technology* 155, p. 107118. doi: 10.1016/j.infsof.2022.107118. **JCR-WOS. A journal edition**.
- Leger, Paul, Nicolás Cardozo, and Hidehiko Masuhara (Apr. 2023a). "An Expressive and Modular Layer Activation Mechanism for Context-Oriented Programming". In: *Information and Software Technology* 156, p. 107132. doi: 10.1016/j.infsof.2022.107132. **JCR-WOS**.
- Leger, Paul, Felipe Ruiz, Nicolás Cardozo, and Hiroaki Fukuda (Feb. 2023). "Benefits, Challenges, and Usability Evaluation of DeloreanJS: A Back-in-Time Debugger for JavaScript". In: *PeerJ Computer Science* 9, e1238. doi: 10.7717/peerj-cs.1238. **JCR-WOS**.
- López, Manuela, Carmen Hidalgo-Alcázar, and Paul Leger (May 2023). "The Effect of Message Repetition on Information Diffusion on Twitter: An Agent-Based Approach". In: *IEEE Transactions on Professional Communication*, pp. 150–169. doi: 10.1109/TPC.2023.3260449. **JCR-WOS**.
- Salinas, Matias, Paul Leger, Hiroaki Fukuda, Nicolás Cardozo, Vannessa Duarte, and Ismael Figueroa (Jan. 2023). "Evaluations of Integrated Programming Environment for First-Year Students in Computer Engineering". In: *Journal of Universal Computer Science* 29.1, pp. 73–98. doi: 10.3897/jucs.81329. **JCR-WOS**.

- Manzano, Carlos, Claudio Meneses, Paul Leger, and Hiroaki Fukuda (Apr. 2022). "An Empirical Evaluation of Supervised Learning Methods for Network Malware Identification Based on Feature Selection". In: *Complexity* 2022.18. doi: 10.1155/2022/6760920. **JCR-WOS**.
- Pizarro, Vicky, Paul Leger, Carmen Hidalgo-Alcázar, and Ismael Figueroa (Jan. 2022). "ABM RoutePlanner: An Agent-Based Model Simulation for Suggesting Preference-Based Routes in Spain". In: *Journal of Simulation* 17.4, pp. 444–461. doi: 10.1080/17477778.2022.2027826. **JCR-WOS**.
- Sosa, Juan Sebastian, Paul Leger, Hiroaki Fukuda, and Nicolás Cardozo (July 2022). "Ad Hoc Systems Management and Specification with Distributed Petri Nets". In: *Journal of Parallel and Distributed Computing* 169, pp. 117–129. doi: 10.1016/j.jpdc.2022.06.015. **JCR-WOS**. NOTE: Selected in "the best of ourselves" on JCC-2022 (main event in Chile).
- Terán, Oswaldo, Paul Leger, and Manuela López (Mar. 2022). "Modeling and Simulating Chinese Cross-border e-Commerce: An Agent-Based Simulation Approach". In: *Journal of Simulation* 17.6, pp. 1–18. doi: 10.1080/17477778.2022.2043791. **JCR-WOS**.
- Camacho, Marta Cecilia, Francisco Álvarez, César Collazos, Paul Leger, Julián Bermúdez, and Julio Ariel Hurtado (June 2021). "A Collaborative Method for Scoping Software Product Lines: a Case Study in a Small Software Company". In: *Applied Sciences - Basel* 11.15. doi: 10.3390/app11156820. **JCR-WOS**.
- Duarte, Vannessa, Paul Leger, Sergio Contreras, and Hiroaki Fukuda (June 2021). "Using Artificial Neural Network to Detect Fetal Alcohol Spectrum Disorder in Children". In: *Applied Sciences (Basel)* 11.13. doi: 10.3390/app11135961. **JCR-WOS**.
- Figueroa, Ismael, Paul Leger, and Hiroaki Fukuda (Jan. 2021). "Which Monads Haskell Developers Use: An Exploratory Study". In: *Science of Computer Programming* 201, p. 102523. doi: 10.1016/j.scico.2020.102523. **JCR-WOS**.
- Fukuda, Hiroaki, Ryota Gunji, Tadahiro Hasegawa, Paul Leger, and Ismael Figueroa (Feb. 2021). "DSSM: Distributed Streaming data Sharing Manager". In: *Sensors* 21.4, pp. 1–15. doi: 10.3390/s21041344. **JCR-WOS**.
- Leger, Paul, Hiroaki Fukuda, and Ismael Figueroa (Sept. 2021). "Continuations and Aspects to Tame Callback Hell on the Web". In: *Journal of Universal Computer Science* 27.9, pp. 955–978. doi: 10.3897/jucs.72205. **JCR-WOS**.
- Aguad, Yaria, Natalia Araya, Javiera Elías, Carmen Hidalgo-Alcázar, and Paul Leger (Dec. 2020). "Impacto del Etiquetado Nutricional en el Comportamiento de los Consumidores de la IV Región, Chile". In: *Revista de Investigación Aplicada en Ciencias Empresariales (RIACE)* 9.1, pp. 7–26. doi: 10.22370/riace.2020.9.1.2596. **LATINDEX**.
- Gálvez, Mará, Paulette Salinas, Camilo San-Martín, Paul Leger, and Carmen Hidalgo-Alcázar (Dec. 2020). "Caso de Estudio Sobre la Efectividad en la Utilización de Facebook en la Venta de Productos y Servicios en Empresas de la Región de Coquimbo". In: *Revista de Investigación Aplicada en Ciencias Empresariales (RIACE)* 9.1, pp. 27–48. doi: 10.22370/riace.2020.9.1.2597. **LATINDEX**.
- Araya, Natalia, Paul Leger, and Manuela López (Apr. 2019). "Whom do I Choose to Diffuse Information on Twitter? An Agent-Based Model Approach". In: *IEEE Latin America Transactions* 17.4, pp. 677–683. doi: 10.1109/TLA.2019.8891933. **JCR-WOS**.
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- You, Koshi, Hiroaki Fukuda, and Paul Leger (Apr. 2025). "The Impact of Context-Oriented Programming on Declarative UI Design in React". In: *Evaluation of Novel Approaches to Software Engineering (ENASE)*. Porto, Portugal, pp. 700–707. doi: 10.5220/0013432300003928. **SCOPUS. Rank B (CORE ranking)**.
- Nuñez, Diego, Tomás Vélez, Paul Leger, and Daniel San Martín (Apr. 2024). "A Reflective Architecture for Agent-Based Models Applied to Social Network Sites". In: *International Conference on Enterprise Information Systems (ICEIS)*. Angers, France: IEEE, pp. 981–988. doi: 10.5220/0012615100003690. **SCOPUS**.
- Cardenas, Sergio, Paul Leger, Hiroaki Fukuda, and Nicolás Cardozo (July 2023). "Points-to Analysis for Context-Oriented JavaScript Programs". In: *Proceedings of the 25th ACM International Workshop on Formal Techniques for Java-like Programs (FTfJP 23)*. Seattle, USA, pp. 18–24. doi: 10.1145/3605156.3606451. **SCOPUS. Rank C (CORE ranking)**.
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- (Mar. 2023b). "Real-time DDoS Attack Defense System in SDN Using LSSOM". In: *26th Conference on Innovation in Clouds, Internet and Networks and Workshops (ICIN)*. Paris, France, pp. 69–73. doi: 10.1109/ICIN56760.2023.10073509. **SCOPUS. Rank National-France (CORE ranking)**.
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- Sabin, Mihaela, Barbara Viola, John Impagliazzo, Renzo Angles, Mariela Curiel, Paul Leger, Jorge Murillo, Hernán Nina, José Antonio Pow-Sang, and Ignacio Trejos (July 2016). "Latin American Perspectives to Internationalize Undergraduate Information Technology Education". In: *Proceedings of the 2016 ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE 2016)*. Arequipa, Peru: ACM Press, pp. 1–22. doi: 10.1145/3024906.3029847. **Rank A (CORE ranking). NOTE: Selected in "the best of ourselves" Chilean JCC-2019**.
- Rocha, Wiliam, Hiroaki Fukuda, and Paul Leger (Dec. 2015). "Modular Asynchronous Web Programming: Advantages and Challenges". In: *Proceedings of 9th International Conference on Bio-inspired Information and Communications Technologies (BICT 2015)*. ACM Press. doi: 10.4108/eai.3-12-2015.2262472. **SCOPUS**.

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### Workshops (SCOPUS)

- Fukuda, Hiroaki, Paul Leger, and Nicolás Cardozo (June 2022). "Layer Activation Mechanism for Asynchronous Executions in JavaScript". In: *Proceedings of the 14th International Workshop on Context-Oriented Programming and Advanced Modularity (COP 22)*. Berlin, Germany: ACM Press, pp. 1–8. doi: 10.1145/3570353.3570354. **SCOPUS**.
- Cleveland, Margareth and Paul Leger (Nov. 2020). "A Collaborative Learning Strategy in an MIS Development Course Using Case Method in Engineering in Information and Management Control". In: *Congreso Chileno de TICs para la Educación (TICXED)*. Coquimbo, Chile: IEEE, pp. 1–5. doi: 10.1109/SCCC51225.2020.9281192. **SCOPUS**.
- Leger, Paul, Hidehiko Masuhara, and Ismael Figueroa (July 2020). "Interfaces for Modular Reasoning in Context-Oriented Programming". In: *Proceedings of the 12th International Workshop on Context-Oriented Programming and Advanced Modularity (COP 20)*. 3. Virtual Event, USA: ACM Press, pp. 1–7. doi: 10.1145/3422584.3423152. **SCOPUS**.
- Leger, Paul and Hiroaki Fukuda (Mar. 2016). "Using Continuations and Aspects to Tame Asynchronous Programming on the Web". In: *Proceedings of the Workshop on Foundations of Aspect-Oriented Languages (FOAL 2016)*. Malaga, Spain: ACM Press, pp. 79–82. doi: 10.1145/2892664.2892675. **Rank C (CORE ranking)**. Superseded by **JUCS (Journal of Universal Computer Science)**.
- Fukuda, Hiroaki and Paul Leger (June 2015c). "Proposals for Modular Asynchronous Web Programming: Issues and Challenges". In: *Proceedings on Pervasive Web Technologies, Trends and Challenges (PEWET 2015)*. Vol. 9396. Lecture Notes in Computer Science. Rotterdam, the Netherlands: Springer, pp. 91–102. doi: 10.1007/978-3-319-24800-4\_8. Published on **Lectures Notes in Computer Science**.
- Silva, Cristian Vidal, David Benavides, José Ángel Galindo, Paul Leger, Rodolfo Villarroel, and Sebastián Valenzuela (Nov. 2015). "JPI Feature Models - Exploring a JPI and FOP Symbiosis". In: *WASE 2015 Workshop on Advanced Software Engineering*. Santiago, Chile: IEEE, pp. 1–6. doi: 10.1109/SCCC.2015.7416583.
- Leger, Paul and Éric Tanter (Mar. 2012). "A Self-Replication Algorithm to Flexibly Match Execution Traces". In: *Proceedings of the 11th Workshop on Foundations of Aspect-Oriented Languages (FOAL 2012)*. Potsdam, Germany: ACM Press, pp. 27–32. doi: 10.1145/2162010.2162019. **Rank C (CORE ranking)**.

### Congresses (Conferences/Workshops not indexed)

Note: These papers are just presentations of technical reports or working papers.

- Moreno-Lumbreras, David, Paul Leger, Sergio Montes-León, Jesus Gonzalez-Barahona, and Gregorio Robles (Sept. 2025). "Evaluating the Comprehension of the Stackage Ecosystem: A Comparison between VR and 2D Visualizations". In: *Registered Report: 2025 IEEE International Conference on Software Maintenance and Evolution (ICSME)*. Auckland, New Zealand. doi: 10.2139/ssrn.5362665. **Registered Report**.
- Espinoza, Francis and Paul Leger (Dec. 2024). "Using Artificial Intelligence to Democratise the Information". In: *International Conference Promoting Democracy and the Rule of Law – Global Perspectives Santiago de Chile*. Santiago, Chile.

- Ortiz, Mario, Paul Leger, and Carmen Hidalgo-Alcázar (Sept. 2022). "Clasificación de Usuarios en Perfiles de Compradores en el Sector Inmobiliario: Análisis Mediante una Experiencia Virtual". In: *XXXIII Congreso de Marketing (AEMARK 2022)*. Valencia, Spain.
- López, Manuela, Oswaldo Terán, and Paul Leger (Sept. 2021). "Modeling Chinese Cross-Border B2C E-commerce in Spain: A Multi-Agent Based Simulation Approach". In: *XXXII Congreso de Marketing (AEMARK 2021)*. Baeza y Úbeda, Spain.
- Figueroa, Ismael, Paulina Guitierrez, Natalia Araya, and Paul Leger (Nov. 2020). "Estudio Indagatorio sobre la Usabilidad Percibida de los Sistemas de Información Contable y Financieros". In: *Conferencia Académica Permanente de Investigación Contable (CAPIC)*. La Serena, Chile.
- Pinto, Domingo, Diego Cortes, Paul Leger, and Manuela López (Sept. 2020). "Una Arquitectura de una Implementación Abierta de un Modelo Basado en Agentes para Campañas de WOM Marketing". In: *XI Congreso Internacional de Computación e Informática del Norte de Chile (Infonor 2020)*. Atacama, Chile.
- Leger, Paul, Felipe Ruiz, and Guillermo Victorero (Aug. 2019). "DeloreanJs: Un Debugger en el Tiempo para JavaScript". In: *X Congreso Internacional de Computación e Informática del Norte de Chile (Infonor 2019)*. Antofagasta, Chile.
- López, Manuela, Carmen Hidalgo-Alcázar, and Paul Leger (Sept. 2019). "Don't Wear me Out! The Effect of Tweet Repetition". In: *XXXI Congreso de Marketing (AEMARK 2019)*. Cáceres, Spain. **Superseded by International Journal of Advertising**.
- Pizarro, Vicky, Paul Leger, Carmen Hidalgo-Alcázar, and Ismael Figueroa (Sept. 2018). "Simulación de un Modelo Basado en Agentes para la Elección de Destinos Turísticos". In: *IX Congreso Internacional de Computación e Informática del Norte de Chile (Infonor 2018)*. Iquique, Chile.
- Araya, Natalia, Paul Leger, and Manuela López (Sept. 2017). "A Quién Selecciono? Análisis De Hubs y Líderes de Opinión en la Difusión de Información en Twitter. Una Simulación Basada en Agentes". In: *XXIX Congreso Internacional de Marketing (AEMARK 2017)*. Sevilla, Spain. **Superseded by IEEE Latin America Transactions**.
- López, Manuela, Carmen Hidalgo-Alcázar, and Paul Leger (Sept. 2017a). "How many times should a company repeat a tweet to reach the highest diffusion? An agent-based simulation approach". In: *V Workshop De Jóvenes Investigadores En Economía Y Empresa*. Jaca, Spain.
- (July 2017b). "The Effect of Message Repetition on Information Diffusion on Twitter Using an Agent-Based Simulation". In: *The 2017 International Conference on Research in Advertising (ICORIA 2017)*. Ghent, Belgium. **Superseded by International Journal of Advertising**.
- Pizarro, Vicky, Paul Leger, and Carmen Hidalgo-Alcázar (Sept. 2017). "Elección de los Destinos Turísticos de España: Una Simulación Basada en Agentes". In: *XXIX Congreso Internacional de Marketing (AEMARK 2017)*. Sevilla, Spain.
- López, Manuela, Carmen Hidalgo-Alcázar, and Paul Leger (Sept. 2016). "Tell Me Again! The Effect of Message Repetition on Information Diffusion on Twitter: An Agent-Based Approach". In: *XXVIII Congreso de Marketing (AEMARK 2016)*. Leon, Spain.
- (Sept. 2015a). "An Agent-based Information Diffusion Study on Social Network Sites". In: *III Workshop Jóvenes Investigadores en Economía y Empresa*. Teruel, Spain. **Superseded by International Journal of Advertising**.
- (Sept. 2015b). "Don't Bother Me with Many Messages: An Information Diffusion Study on Social Network Sites with An Agent-Based Approach". In: *XXVII Congreso de Marketing (AEMARK 2015)*. Pamplona, Spain. **Best Working Paper Award!** **Superseded by International Journal of Advertising**.
- Vidal, Cristian, David Benavides, José Galindo, and Paul Leger (Sept. 2015). "Exploring the Synergies between Join Point Interfaces and Feature-Oriented Programming". In: *XX Jornadas de Ingeniería del Software y Bases de Datos (JISBD 2015)*. Santander, España.
- Azegami, Takeshi, Hiroaki Fukuda, and Paul Leger (Nov. 2014). "Towards a Virtual Block Approach to Tame Asynchronous Programming". In: *Proceedings of 8th International Conference on Bio-inspired Information and Communications Technologies (BICT 2014)*. Boston, USA, pp. 239–242. DOI: 10.4108/icst.bict.2014.257939. **Superseded by IJSEKE (International Journal of Software Engineering and Knowledge Engineering)**.
- Vidal, Elizabeth, Edwin Morales, and Paul Leger (Oct. 2014). "Usando BPMN para Modelar Procesos en el Área de Ingeniería y Proyectos de una Empresa Minera del Perú". In: *VI Congreso Internacional de Computación y Telecomunicaciones (COMTEL 2014)*. Lima, Peru.

- Ramírez, Pablo, Paul Leger, and Andres Vallone (Aug. 2013). "Un Modelo Flexible para la Simulación de Distribución de Ciudades". In: *IV Congreso Internacional de Computación e Informática del Norte de Chile (Infonor 2013)*. Coquimbo, Chile. **Superseded by INGENIARE**.
- Ramírez, Patricio, Paul Leger, and Carolina Fuentes (Nov. 2013). "Explorando los Programas de Ingeniería en Sistemas de Información y Control de Gestión en Chile". In: *XV Congreso Chileno de Educación Superior en Computación (CCESC 2013)*. Temuco, Chile. **Superseded by Formación Universitaria**.
- Leger, Paul (Nov. 2010). "Developing Context-Aware Systems Using Expressive Trace-based Mechanisms". In: *Encuentro Tesistas de Doctorados en Jornada Chilena de Computación (JCC)*. Antofagasta, Chile.
- Leger, Paul and Éric Tanter (Mar. 2010). "Towards an Open Trace-Based Mechanism". In: *Proceedings of the Ninth Workshop on Foundations of Aspect-Oriented Languages (FOAL 2010)*. Ed. by Gary T. Leavens, Shmuel Katz, and Mira Mezini. Rennes and Saint-Malo, France, pp. 25–30. **Tech report CS-TR-10-04, University of Central Florida**.
- Leger, Paul (Nov. 2008). "Context-Dependent Adaptations Using Tracematch Extensions". In: *Encuentro Tesistas de Doctorados en Jornada Chilena de Computación (JCC)*. Punta Arenas, Chile.

### *Posters*

- Leger, Paul, Carmen Hidalgo-Alcázar, and Manuela López (Apr. 2018). "Using an agent-based model to measure the message repetition effect on Twitter". In: *Proceedings of the 33rd Annual ACM Symposium on Applied Computing (SAC 2018)*. Pau, France: ACM Press, pp. 1828–1830. doi: 10.1145/3167132.3167429. **Superseded by International Journal of Advertising**.
- Fukuda, Hiroaki and Paul Leger (Apr. 2015a). "A Library to Modularly Control Asynchronous Executions". In: *Proceedings of the 30th Annual ACM Symposium on Applied Computing (SAC 2015)*. Salamanca, Spain: ACM Press, pp. 1648–1650. doi: 10.1145/2695664.2696034.
- (June 2015b). "An Efficient Agent Location Management for Wireless Sensor Networks". In: *Proceedings of International Conference on Distributed Computing in Sensor Systems (DCOSS 2015)*. Fortaleza, Brazil: ACM Press, pp. 10–12. doi: 10.1109/DCOSS.2015.19. **Superseded by JUCS (Journal of Universal Computer Science)**.
- Leger, Paul, Manuela López, Carmen Hidalgo-Alcázar, and Hiroaki Fukuda (Dec. 2015). "An Open Agent-Based Model to Simulate the Effect of WOM Marketing Campaigns". In: *Proceedings of 9th International Conference on Bio-inspired Information and Communications Technologies (BICT 2015)*. New York, USA: ACM Press. doi: 10.4108/eai.3-12-2015.2262533. **A mirror version (with the same DOI) was published in the journal EAI Endorsed Transactions on Smart Cities**.
- Leger, Paul and Hiroaki Fukuda (Nov. 2014). "Why do Developers not Take Advantage of the Progress in Modularity?" In: *Proceedings of 8th International Conference on Bio-inspired Information and Communications Technologies (BICT 2014)*. Boston, USA: ACM Press, pp. 388–389. doi: 10.4108/icst.bict.2014.257938.

### *Ph. D.*

- Leger, Paul (Nov. 2012). "Opening Up Trace-Based Mechanisms — Application to Context-Aware Systems". PhD thesis. University of Chile, pp. 1–180. **Published in <https://repositorio.uchile.cl/handle/2250/111916>**.

## Software Development Engineer

As I enjoy working on software engineering, I occasionally work as a freelancer doing software development and as a team manager in software projects:

**Macrossoftware.** Consulting software engineer, 2020 - present.

**G-Tech.** Project Manager, a startup mobile application, 2022.

**Autopista Central.** Consulting engineer, 2017.

**Regional Observatory (working market).** Software project manager, implementation of an information system that allows users to analyze working market in a region of Chile, 2016 - 2017.

**Autopista Central.** Consulting engineer, 2011.

**Center for Advanced Research in Arid Zones (CEAZA).** Research assistant, two tasks: a) using MM5 (mesoscale model) to simulate or predict mesoscale atmospheric circulation and b) applying artificial neural networks to group/classify rainfall scenarios (both tasks applied to a limited-area in Chile), 2002 - 2004.

**Viña Ocho Tierras.** Project Manager of Web Site, 2002.

## Software Development for Research

My software projects are more related to creating complex software artifacts than developing traditional industrial software (*e.g.*, Inventory Management). Source: <http://pleger.cl/software>.

**SBABM:** An agent-based model to simulate the e-commerce behavior between agents and markets. <https://github.com/pragmaticsLaboratory/SBABM>, 2023. [APPLICATION].

**EMAjs:** JavaScript library that implements an Expressive and Modular Activation mechanism for context-oriented programming. <https://github.com/pragmaticsLaboratory/EMAjs>, 2022. [LANGUAGE].

**CommerceSimulator:** Java software to simulate buyers in e-commerce like Amazon, AliExpress, and Wish. This simulation considers the endorsements theory. Finally, this software can be used to execute different kinds of experiments. <https://github.com/pleger/ABME-market>, 2021. [APPLICATION].

**DeloreanJS:** A back-in-time debugger for JavaScript. This software is strongly developed by Felipe Ruiz ([felipe.ruiz@alumnos.ucn.cl](mailto:felipe.ruiz@alumnos.ucn.cl)) and Guillermo Victorero ([guillermo.victorero@alumnos.ucn.cl](mailto:guillermo.victorero@alumnos.ucn.cl)). You can try it on <https://pleger.cl/sites/deloreanjs>. <https://github.com/pragmaticsLaboratory/deloreanjs>, 2019. [APPLICATION].

**AspectScript:** An aspect-oriented extension of JavaScript for expressive AOP, which integrates several state-of-the-art features related to higher-order programming and expressive scoping of aspects. <https://pleiad.cl/aspectscript>, 2010. [LANGUAGE].

**FASOW:** FASOW provides an Open Implementation for Agent-Based Models applied to e-WOM Marketing Campaigns. This software is strongly developed by Diego Nuñez ([diego.nunez.trabajo@gmail.com](mailto:diego.nunez.trabajo@gmail.com)). <https://github.com/pragmaticsLaboratory/fasow>, 2024. [LIBRARY].

**Matcher Cell:** A JavaScript library to flexibly match patterns. You can try it on <https://pragmaticsLaboratory.github.io/matcher-cells-study-cases>. <https://github.com/pragmaticsLaboratory/match-cell-base>, 2021. [LANGUAGE].

**RAI-JS:** A JavaScript library for Context-Oriented Programming (COP), which supports reactive activation mechanisms. You can try it on <https://pleger.cl/sites/raijs>. <https://github.com/pleger/rai-js>, 2019. [LIBRARY].

**Sync/CC (proof of concept):** A library to address callback issues on JavaScript. You can try it on <https://pleger.cl/synccc>. <https://github.com/pragmaticsLaboratory/synccc>, 2019. [LIBRARY].

**ESA-JS:** An implementation of ESA, describing an expressive stateful aspect language. A stateful aspect language supports the definition of monitors to observe and react to a program execution trace. They have numerous applications in domains like error detection, security, and modular definition of crosscutting concerns. 2012. [LANGUAGE].

**WeCa:** A practical library that allows for modular and flexible control over causality issues on the Web. In contrast to current proposals, WeCa uses stateful aspects, message-ordering strategies, and vector clocks. WeCa has been used with several practical examples from Web applications. For instance, we analyze the flow of information in these applications like Twitter using WeCa. 2012. [LIBRARY].

## Awards & Distinctions

**The Best of Ourselves**, two scientific articles have been selected on “The Best of Ourselves” on Chilean Computer Science Society (Chile), 2019 & 2022.

**Funding for Visiting Researcher**, Alliance of Pacific (AGCI 2018) for a research stay, Colombia, 2018. <https://alianzapacifico.net/becas-2>.

**Best working paper award**, AEMARK, Spain, 2015. <https://www.aemarkcongresos.com/congreso2015/es/premios>.

**Selected as the best professor for undergrad teaching**, Business School, Catholic University of the North, Chile, 2014 & 2017.

**Ph. D. funding**, Conicyt, Chile, 2007.

**Ph. D. funding**, Nic, Chile, 2006.

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