

Gervasio Daniel Pérez Curriculum Vitae

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Work address: CSC-CONICET
Godoy Cruz 2390, 1st Floor
Buenos Aires, Argentina
Work Phone no.: +54 11 4899 5500
Work Email: gperez@csc.conicet.gov.ar
Home Address: O'Higgins 4729 4° A, C.A.B.A. (1429)
Personal Email: sherwoodinc@gmail.com
Date Of Birth: May 28th, 1981

Degrees

- 2018 | **Doctor de la Universidad de Buenos Aires en Ciencias de la Computación**
(*PhD in Computer Science*)
- 2009 | Licentiate in Computer Science – Universidad de Buenos Aires
(*MSc in Computer Science equivalent*)
- 2008 | Graduate Analyst in Computation – Universidad de Buenos Aires
(*Bachelor in Computer Science equivalent*)
- 1998 | High School Degree in Science – E. E. M. N°2 "Hernandarias", Buenos Aires.

Industry Experience and Technologies

- since 2019 | **CSC-CONICET.** Full time research engineer. My tasks include HPC cluster computing support and maintenance (SLURM, Kubernetes, Jupyter Notebooks) and research and software development in distributed systems simulation tools in C++/Python/Julia (SIMGRID framework) together with research paper writing. Our current subject of study are distributed cryptocurrencies (such as Bitcoin) and their runtime properties.
- since 2010 | **Opulens S.A.** Software development consultant in the progressive lens design field. Use of C++/Python/QT5 for development of Windows/Linux cross-platform software for design (mathematical lens representation models and related design tools) and lens manufacturing (interfacing with lens manufacturing hardware equipment). The job involves inter-disciplinary work with optical physics researchers and business domain experts in order to provide versatile tools for the lens manufacturing laboratories. My computer science background helped a lot in bridging the gap between theoretical models and concrete implementations.
- 2009-2011 | **Sistemas Globales S.A.** Senior C/C++/Java full time developer in embedded control systems for the oil industry (for Veeder-Root Co., Simsbury, CT, USA). On-site work experience was included (a 3-month period in May-August 2011). Worked with embedded Linux devices using the following communication frameworks/protocols: CORBA (ACE/TAO), SOAP. Google GWT framework experience for web user interfaces. QT3/QT4, Boost C++ libraries, and Perl, among other technologies.
- 2005-2009 | **Sielcon S.R.L.** C/C++/C software developer in the entertainment industry (Casino games: slots, electronic roulette and bingo). Developed player betting stations in Linux platform (C/C++), and distributed game coordination and accounting services in Microsoft .Net (C). My tasks included game development (both UI and game engine) and design of low-level proprietary communication protocols between game stations and servers.

Teaching Experience

Department of Computer Science, FCEyN-UBA

since 2015	Lead Teaching Assistant
2010-2015	Graduate Teaching Assistant
2009	Undergraduate Teaching Assistant

Courses given

Computer Architecture I (1 semester) *hardware architecture – computer processor design – instruction set – microarchitecture and microprogramming*

Algorithms and Data Structures I (2 semesters). *logical specification of computing problems – proof of correctness for imperative programs – handling of sequence and matrix types – introduction to sorting and basic time complexity analysis*

Algorithms and Data Structures II (10+ semesters). *modular software – algebraic specification of abstract data types – proof of properties by structural induction – data structure design – time complexity analysis – sorting – implementation with C++ classes – dynamic memory handling*

Research Funding Awarded

Funding Entity	Funding Type	Period
CONICET	PHD Student Grant (first term)	2011-2016

Research Group Memberships

since 2019	LICAR lab - FCEyN-UBA: Reserch tasks in the field of simulation of complex distributed systems. Director: Esteban Mocskos.
2011-2019	LaFHIS Software Engineering Lab - FCEyN-UBA: Worked in my PHD: “ <i>Design, verification and implementation of concurrent software in multicore architectures</i> ”. Developed a C++ template based framework to construct concurrent software by means of a formal parallelism description specification. <i>Advisor: Dr. Sergio Yovine.</i>
2005-2011	Optics and Human Vision Group (GOyV) - FI-UBA: Study of orthogonal polynomial bases (Zernike polynomials) and their application to the analysis of optical aberrations in human vision . Also provided computing skills assistance to other PHD student in image analysis for characterization of uniaxial crystals based on its diffraction patterns.

Contributions to Software Tools

PCR	Designed and developed the <i>Producers, Consumers, Reducers</i> concurrent pattern and a C++ reference implementation as the core of my PhD studies.
SLG07	Developed a de-centering, scaling and rotation tool of Zernike polynomial coefficients. Application: scaling and recentering of Zernike coefficients obtained from different sized pupils in order to be able to correctly compare aberrations for differently shaped eyes (measured with a retinal topographer).
Zeus	Zeus is a <i>timed model checker</i> derived from KRONOS. My (MSc thesis) work consisted in extending a tree data structure (eCDD) used for convex and non-convex time zone representation (of clock variables). Added compression support to the data structure by means of redundant subtree removal.

Other Studies and Interests

English Language: Fluent speaker and advanced writing/reading skills. 7th year completed in the Cambridge Institute of English Culture, Buenos Aires, Argentina.

Other interests. I like to play board (and computer) games, including paper&pencil RPGs. I used to practise Taekwondo for several years. I am also a photographer in my free time.

Scientific Production

PHD Thesis

1. Perez, G. D. "Specification, design and implementation of a pattern-based concurrent programming environment". Spanish, English. Tesis Doctoral. Ciudad de Buenos Aires: Universidad de Buenos Aires. Facultad de Ciencias Exactas y Naturales, Apr. 2018. https://bibliotecadigital.exactas.uba.ar/collection/tesis/document/tesis_n6506_Perez (visited on 2021). Published 2019-04-30.

Peer Reviewed Publications in National / International Journals

1. Pérez, G. and S. Yovine. Formal specification and implementation of an automated pattern-based parallel-code generation framework. *International Journal on Software Tools for Technology Transfer* (Aug. 2017).
2. Comastri, S., L. Perez, G. Martin, A. Bianchetti, and G. D. Perez. Modos Zernike al contraer, descentrar y rotar la pupila: métodos analítico y gráfico. *Óptica pura y aplicada* 42(1987) (2009), 163–176.
3. Comastri, S. A., K. Bastida, A. Bianchetti, L. I. Perez, G. D. Perez, and G. Martin. Zernike aberrations when pupil varies: selection rules, missing modes and graphical method to identify modes. *Journal of Optics A: Pure and Applied Optics* 11(8) (Aug. 2009), 085302.
4. Comastri, S., G. D. Perez, G. Martin, and A. Bianchetti. Aberraciones Zernike corneales para diferentes pupilas: precisión en los parámetros y aplicaciones. *Óptica pura y aplicada* 41(4) (2008), 367–380.
5. Comastri, S. a., L. I. Perez, G. D. Perez, G. Martin, and K. Bastida. Zernike expansion coefficients: rescaling and decentring for different pupils and evaluation of corneal aberrations. *Journal of Optics A: Pure and Applied Optics* 9(3) (Mar. 2007), 209–221.

Peer Reviewed Extended Publications in International Conferences

1. Comastri, S. a., L. I. Perez, G. D. Pérez, K. Bastida, G. Martin, N. U. Wetter, and J. Frejlich. Wavefront aberrations: analytical method to convert Zernike coefficients from a pupil to a scaled arbitrarily decentered one. In: *AIP Conference Proceedings*. Vol. 992. AIP, 2008, pp.69–74. ISBN: 9780735405110. DOI: 10.1063/1.2926955. <http://link.aip.org/link/APCPCS/v992/i1/p69/s1%5C&Agg=doi>.

Other Peer Reviewed Participation in National / International Conferences

1. Perez, G., E. Pavese, and F. Schapachnik. Branching Data Structures for Real-Time Model Checking Not As Good As Thought. In: Simposio Argentino de Ingeniería de Software (ASSE 2012), en el marco de las 41 JAIIO (Jornadas Argentinas de Informática), La Plata, Buenos Aires, Argentina 2012. Aug. 2012.
2. Comastri, S., L. I. Perez, G. D. Perez, G. Martin, and A. Bianchetti. Corneal aberrations in keratoconic eyes: influence of pupil size and centering. *Journal of Physics: Conference Series* 274 (Jan. 2011), 012109.
3. Veiras, F., G. Perez, M. T. Garea, and L. I. Perez. Characterization of uniaxial crystals through the study of fringe patterns. In: *Journal of Physics: Conference Series*. Vol. 274. IOP Publishing, Jan. 2011, pp.012030. <http://iopscience.iop.org/1742-6596/274/1/012030>.
4. Comastri, S., L. Perez, G. Perez, G. Martin, and A. Bianchetti. MÉTODOS PARA TRANSFORMAR COEFICIENTES ZERNIKE AL VARIAR LA PUPILA DE UN SISTEMA ÓPTICO ABERRADO. In: *ANALES AFA*. Ed. by AFA. Vol. 21. 60-68. Rosario: AFA, 2009, pp.60–68. <http://www.unicen.edu.ar/crecic/analesafa/vol21/v21-13-60-68.pdf>.

5. Comastri, S. a., L. I. Perez, G. D. Pérez, K. Bastida, G. Martin, N. U. Wetter, and J. Frejlich. *Wave-front aberrations: analytical method to convert Zernike coefficients from a pupil to a scaled arbitrarily decentered one*. 2008. doi: 10.1063/1.2926955. <http://link.aip.org/link/APCPCS/v992/i1/p69/s1%5C&Agg=doi>.
6. Comastri, S. A., L. I. Perez, G. D. Pérez, G. Martin, and K. Bastida. Coeficientes Zernike de la función aberración: influencia del escaleo y descentrado pupilar y aplicación al cálculo de aberraciones corneales. In: Encuentro AFA '06, Prov. San Luis, Argentina. Sept. 2006.

Other Participation in National / International Conferences (not peer reviewed)

1. Perez, G. and S. Yovine. Desarrollando software concurrente, correcto y eficiente. In: *Sesión de pósters de divulgación*. Escuela de Ciencias Informáticas (ECI), Departamento de Computación, FCEyN, UBA (Buenos Aires 2012). July 2012.
2. Comastri, S. A., G. Perez, G. Martin, and M. Stabile. Lentes oftálmicas progresivas: qué es el astigmatismo? In: *Libro de resúmenes*, p.295. II Reunión conjunta AFA-SUF, Montevideo, Uruguay (2011). Sept. 2011.
3. Bastida, K., G. D. Pérez, G. Martin, S. A. Comastri, and L. I. Perez. Desarrollo de la aberración del frente de ondas en modos Zernike: transformación de coeficientes al contraer y trasladar la pupila. In: Encuentro de óptica Aplicada, CABA / UNLP. Oct. 2007.