

Gerardo L. PUGA

PERSONAL DETAILS

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PROFESSIONAL PROFILE

MSc. in Electronic Engineering, Embedded Systems Specialist. Real-time embedded Software developer, with ten years of experience working on the design and implementation of software for navigation devices for use in aerospace applications. Software developer for robotics projects using the Robot Operating System (ROS) framework.

EDUCATION

- DEC. 2016 EMBEDDED SYSTEMS SPECIALIST.
Universidad de Buenos Aires, Buenos Aires, Argentina
Graduation Project: "Development of a SPARC LEON3 port of the operating system of the CIAA firmware" [\[link\]](#). Advisor: Esp. Ing. P. RIDOLFI (UTN, UBA).
- DEC. 2015 MASTER OF SCIENCE IN ENGINEERING.
Universidad Nacional de La Plata, La Plata, Argentina
Thesis: "Real-time Signal Acquisition and Tracking for GNSS receivers with multiple inputs" [\[link\]](#). Advisors: Dr. P. A. RONCAGLIOLO (UNLP), Dr. Ing. M. A. MAYOSKY (UNLP).
- AUG. 2009 ELECTRONICS ENGINEER.
Universidad Nacional de La Plata, La Plata, Argentina
Thesis: "Receptor de GPS espacial: etapa de procesamiento digital en tiempo real". Advisors: P. A. RONCAGLIOLO (UNLP), G. SAGER (UNLP).

WORK EXPERIENCE

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| 2018 to the
PRESENT | C++/PYTHON DEVELOPER FOR ROBOTICS IN PROJECTS USING ROS at Ekumen Labs .
Development of applications in the C++ and Python languages. Design and implementation of applications using the ROS (ROBOT OPERATING SYSTEM) development framework. |
| 2009 to 2019 | ASSOCIATE PROFESSOR at Universidad Nacional de La Plata, Engineering Department. Teaching "Advanced Computer Architectures" and "Introduction to Digital Design", both within the Electronic Engineering and Computer Engineering programs. The nature of the position has evolved throughout the years, having also worked as Teaching Assistant and later Assistant Professor to courses such as "Signal Communication", "Mathematical Analysis V" and "Power Electronics". |
| 2009 to 2018 | REAL-TIME EMBEDDED SOFTWARE ENGINEER at Universidad Nacional de La Plata. Developing embedded software for Global Navigation Satellite Signal (GNSS) receivers of the GPS and GLONASS satellite constellations: C language programming of embedded and non-embedded devices, design and implementation of digital communication tracking loops, data communication protocols implementation, hardware-software integration, data integrity analysis. |

LANGUAGES

Spanish: Native.
English: Reading, Writing: Advanced | Speaking : Intermediate
Sat for the Cambridge Level 2 Certificate English exam (FCE) in December 2014, achieving a Grade A score. This grade is equivalent to the Council of Europe Level C1 on the Common European Framework of Reference for Languages (CEFR).

SKILLS & TRAINING

Advanced: C++ language programming, C language programming, Linux, Embedded Systems, Robot Operating System (ROS), MATLAB, version control systems using GIT and SVN, GPS and GLONASS global navigation satellite systems, driver and system level programming, POSIX programming, real-time operating systems (RTEMS, OSEK-OS, FreeRTOS), SPARC/LEON3 and ARM Cortex systems, microcontrollers, TCP/IP networks, ~~ETEX~~.
Intermediate: VHDL, software testing, programmable logic, Python language programming, data processing using Pandas and NumPy, data visualization using Matplotlib and Bokeh, software containers using Docker, Structured Query Language (SQL).

HONORS & AWARDS

AUG. 2017 Awarded the FIRST PRIZE in the Student Projects competition of the SASE/CASE 2017 embedded systems conference and symposium, category "Computadora Industrial Abierta Argentina (CIAA)", for the specialization graduation project "Port del Firmware CIAA para plataformas basadas en FPGA con softcore LEON3".
NOV. 2016 Received a DISTINGUISHED POSTGRADUATE SCHOOL GRADUATE recognition from the Postgraduate Education Office of the Engineering Faculty of the Universidad Nacional de La Plata (UNLP).
JUL. 2011 Received a recognition from the Engineering Department of the Universidad Nacional de La Plata, for having participated in the project "Satélite Argentino Científico SAC D", during the satellite mission SAC-D/Aquarius.

SCHOLARSHIPS

AUG. 2014 PROFITE 2015. An Argentine Ministry of Education scholarship for faculty members of public universities working on finishing their postgraduate studies.

PARTICIPATION IN OPEN SOURCE PROJECTS

[CIAA Project](#) Created a new firmware port that allows to use the CIAA Firmware on platforms based on FPGA devices and the LEON 3 soft-core processor. Extended the ARM port of the CIAA Firmware to make it compatible with the picoCIAA Single-Board-Computer. Redesigned the ARM hardware abstraction layer of the FreeOSEK operating system in order to make the task context swap algorithms more robust.

PUBLISHED PAPERS

- G.L. Puga. "Linear-Feedback Shift Register Seed Determination for Memory Constrained Embedded Systems", IEEE URUCON 2017, Montevideo, Uruguay. October 2017.
- G.L. Puga. "Port del Firmware CIAA para plataformas basadas en FPGA con softcore LEON3", SASE/CASE 2017, Buenos Aires, Argentina. August 2017.
- G.L. Puga, P.A. Roncagliolo, J.G. García, "Multi-antenna GNSS Receiver Tracking Algorithm for Vehicles With Unconstrained Three-dimensional Motion". SASE/CASE 2014, Buenos Aires, Argentina. August 2014.
- G.L. Puga, P.A. Roncagliolo, J.G. García, "Multi-millisecond GNSS Maximum Likelihood Bit Synchronization Method". SPACOMM 2013, Venice, Italy. April 2013.

- G.L. Puga, P.A. Roncagliolo, J.G. García, “Low Computational Cost GNSS GPS/GLONASS Maximum Likelihood Bit Synchronization Method”. AST 2012, La Plata, Argentina. August 2012.
- G.L. Puga, P.A. Roncagliolo, J.G. García, “A blind synchronization method for multiple front-end GPS Receivers”. RPIC 2011, Paraná, Argentina. November 2011.
- G.L. Puga, P.A. Roncagliolo, J.G. García, C.H. Muravchik, “Real-time GPS receiver based on a radiation tolerant microprocessor”. EAMTA/CAMTA 2010, Montevideo, Uruguay. October 2010.

OTHER EDUCATION

Academic Postgraduate Courses

COURSE NAME	YEAR	HOURS	INSTITUTION
Software Testing for Embedded Systems	2017	24	Eng. UBA
Implementation of Operating Systems	2015	24	Eng. UBA
Certification of Embedded Systems	2015	24	Eng. UBA
Design for Manufacturability	2015	24	Eng. UBA
Real-Time Operating Systems (II)	2015	24	Eng. UBA
General Purpose Operating Systems	2015	24	Eng. UBA
Real-Time Operating Systems (I)	2015	24	Eng. UBA
Project Management	2015	24	Eng. UBA
Software Engineering for Embedded Systems	2015	24	Eng. UBA
Communication Protocols for Embedded Systems	2015	24	Eng. UBA
Programmable Logic Circuits (FPGA)	2014	24	Eng. UBA
Fault-Tolerance in HPC Systems	2013	70	CS. UNLP
Fault-Tolerant System Design	2012	24	Eng. UBA
Wireless Communications	2012	90	Eng. UNLP
General-Purpose GPU Programming	2012	70	CS. UNLP
Introduction to Embedded Systems	2011	96	Eng. UBA
Hardware Support for Parallel Programming	2011	70	CS. UNLP
High-Performance Computing Architectures	2011	70	CS. UNLP
Statistical Signal Processing	2010	90	Eng. UNLP
Digital Signal Processing	2009	72	Eng. UNLP
Linear Systems I	2008	60	Eng. UNLP
Wideband Trans. Techniques for Cell. Networks	2008	30	Eng. UNLP

Training Schools Attended

- NOV. 2017 “ADVANCED SCHOOL ON FULLY PROGRAMMABLE SYSTEMS-ON-CHIP FOR SCIENTIFIC INSTRUMENTATION”
 Training school that took place at The Abdus Salam International Centre for Theoretical Physics (ICTP), in Trieste, Italy. The school covered topics such as the design of SoC systems based on the Xilinx Zynq architecture, embedded system programming, real-time operating systems, the use of the TCP/IP protocol stack through the lwIP library, data visualization tools, user interface design, and an introduction to the fundamentals of High-Level Synthesis (HLS) and reconfigurable logic. The total duration of the school was about 65 hours spread over the course of two weeks.

Training Courses

- SEP. 2018 “INTRODUCTORY COURSE TO THE R LANGUAGE”
Prepared by the Latin-American Virtual Campus (CAVILA) and the Universidad Nacional de La Plata (UNLP).
Introductory course on the utilization of the R language for the statistical analysis of dataset.
- MAY 2018 “DATA SCIENTIST WITH PYTHON CAREER TRACK”
Prepared by [DataCamp Inc.](#).
Course on the utilization of the Python programming language in the domain of data analysis and visualization. The course has total duration of 67 hours and covers the use of Python, Pandas, Matplotlib, Seaborn, Bokeh and Scikit.
- MAY 2018 “FOUNDATIONS OF DATA SCIENCE: COMPUTATIONAL THINKING WITH PYTHON ([DATA8.1X](#)), INFERENCEAL THINKING BY RESAMPLING ([DATA8.2X](#)) AND PREDICTION AND MACHINE LEARNING ([DATA8.3X](#))”
Jointly prepared by [UC Berkeley](#) and [edX](#).
Introduction to the fundamentals of Data Science using the the Python language for data processing, visualization and inferential data analysis.
- MAR. 2018 “INTENSIVE COURSE ON MANUAL SOFTWARE TESTING”
By Gustavo Terrera on behalf of [TestingBaires](#).
Course on manual software testing with a strong emphasis on the use of process management tools (Testlink, Redmine, Practitest, Jira). The course covers time-effort estimation, traceability, design of the testing plan, and tool exploration.

Attended Seminars

- NOV. 2016 “MISSION SUCCESS FIRST: LESSONS LEARNED CLASS”
By Larry Ross and Joe Nieberding, Aerospace Engineering Associates LLC.
Through a series of lectures where the instructors dissect the causes of a number of high profile mission failures taken from the history of the space flight, the instructors share more than four decades worth of experience working on the design and operation of space vehicles at the John H. Glenn Research Center at NASA. The topics covered include the management of complex projects, the importance of quality assurance, and the subtleties of the design of critical systems, among others.