### Pablo Balmaceda Rescia

|Cel.: +39 3780884168| [balmacedarescia@gmail.com](mailto:balmacedarescia@gmail.com) | [LinkedIn](https://www.linkedin.com/in/balmacedarescia/) | [GitHub](https://github.com/Pablichenco)| [Pisa, Italy](https://www.google.com/maps/place/Pisa/@43.7067293,10.3253383,12z/data=!3m1!4b1!4m5!3m4!1s0x12d5919af0f6598f:0xaab80fb5a78478c8!8m2!3d43.7228386!4d10.4016888) | [Web](https://pablichenco.github.io/) |

SUMMARY

# Aerospace Software Developer with 3+ years of experience in **C#**, **C**/**C++**, and **FORTRAN**. Expertise in **software development**, **system optimization**, and **virtual reality (VR) integration**. Looking for solving complex technical challenges and collaborating with cross-functional teams to deliver impactful software solutions.

# PROFESSIONAL EXPERIENCE

**Aerospace Software Developer**. Sep 2023 – present

[*LEONARDO IT*](https://www.leonardo.com/en/home)| [TXT esolutions](https://pace.txtgroup.com/products/extended-reality/pacelab-weavr/?hsLang=en) Milan Lombardy, **Italy**

* Contributed to **bug resolution** mainly in **C++**/**SQL** and added feature enhancements to **SkyFlight Mission Planning**, improving system reliability by **5%** and ensuring seamless data transfer for military and civil operations.
* Designed and deployed features in both **C++** (back-end) and **Qt** (front-end), improving performance by **15%**.

**Aerospace Software Developer**. Sep 2022 – Sep 2023

[*LEONARDO UK*](https://www.leonardo.com/en/home)| [TXT esolutions](https://pace.txtgroup.com/products/extended-reality/pacelab-weavr/?hsLang=en) Yeovil Somerset, **United Kingdom**

* Created a **C# server/client video streaming solution**, enabling cockpit panel sharing with **4K resolution** and improving image clarity and situational awareness for pilots.
* Integrated **VR controllers** into helicopter cockpit simulations using **Unity**, reducing system response times by **15%** and contributing to an improved simulation experience.
* Collaborated with senior developers and a team of 8 professionals, including graphic designers and managers, to ensure timely project delivery.

**Aerospace Software Developer**. Feb 2022 – Aug 2022

[*LEONARDO IT*](https://www.leonardo.com/en/home)| [TXT esolutions](https://pace.txtgroup.com/products/extended-reality/pacelab-weavr/?hsLang=en) Milan Lombardy, **Italy**

* Developed a **C# automation tool** to translate pilot procedure simulations for integration with [**Unity/WEAVR**](https://unity.com/products/weavr), achieving a **95% success rate** and reducing development time for **VR** procedures by **70%**.

**Physics Research.** Sep 2019 –Jan2020

*Physics Department* | UNIPI Pisa Tuscany, **Italy**

* Investigated **topological invariants** in Quantum Field Theory, contributing to research on **topological quantum computing**.

## **Research Assistant.** Jul 2015 – Nov 2016

*Materials Science and Engineering Research Center (CICIMA Spanish acronym)* | UCR | [CICIMA-UCR](http://www.cicima.ucr.ac.cr/index.php/en/) San Pedro, **Costa Rica**

* Optimized the **thin films spectrometer**, improving precision by **.5%**. Adjusted the wavelength and thickness range using a Deuterium and Tungsten-Halogen light source, resulting in more accurate material analysis.
* Implemented a **C-based implementation** of the **Levenberg-Marquardt algorithm** ([GitHub-LMA](https://github.com/Pablichenco/Levenberg-Marquardt)) for non-linear optimization, achieving more accurate **curve fitting** for the refractive index. Applied a **reduced error criterion**, ensuring that the fitting error was on par with measurement error (χ² ≅ 1), creating a robust method applicable to other optimization problems.

**Mathematics Assistant**. Mar 2014 – Nov 2015

*Mathematics Department* | UCR San Pedro, **Costa Rica**

* Assisted freshman students (group of 30) by providing additional support outside of regular lessons, including **examples, problem-solving sessions**, and clarifying doubts.
* Contributed to a **9% improvement in student success rates** compared to previous years by offering personalized guidance and scoring quick tests.

# VOLUNTEER EXPERIENCE

**Volunteer Teacher** | *logic-math teacher for deaf high school students* Sep 2016 – Sep 2017

* Taught logic and mathematics to deaf students, leading to a **67% improvement** in university admission exam performance.

# RESEARCH

**Undergraduate final year Research Project**| *Dielectric function of Zr in terms of hydrogen* Sep 2016 – Sep 2017

* Developed a **zirconium and palladium multi-layer thin film** to study optical properties based on hydrogen concentration, achieving a reflectance of nearly **80% in the infrared spectrum**.
* Utilized the **LAPACK library** to implement the **Levenberg-Marquardt algorithm**, creating a robust numerical model. Successfully compared experimental measurements with an estimated error of **10⁻³**(visualized using [plot.ly](https://chart-studio.plotly.com/~pablichenco#/)).

**Quantum Mechanics review paper** | [*Density Operator*](https://www.academia.edu/31593881/Density_matrix_notes) UCR, Physics

* Explored the applications of the **Density Operator** in **quantum computing** (e.g., **Bloch sphere**, expectation values, statistical physics).

# EDUCATION

## **Universidad de Costa Rica (UCR)** St Pedro, CR

*Bachelor of Science in Physics* Mar 2012 - Sep 2017

*Bachelor of Science in Mathematics* Mar 2015 - Sep 2017

## **Università di Pisa (UNIPI)** Pisa, IT

*Master of Science in Mathematics* Sep 2018–unfinished

*Master of Science in Physics*  Sep 2019 – Feb 2020 and Sep 2023 - present

# SKILLS & TECHNICAL SKILLS

**Programming Languages**:

* Proficient: **C**/**C++**,**C#**, **FORTRAN**, LaTeX, Wolfram Mathematica
* Familiar: Python, **SQL**, **Bash**, HTML, CSS, JavaScript.

**Frameworks & Libraries**: **Qt**, **UNITY**, LAPACK, GNUplot, **Git**, Tortoise SVN, Plotly API, .

**Developer Tools**: **Visual Studio**, **Xcode**, Atom, Eclipse, RStudio, Texpad, TexMaker, Mathematica.

**Methodologies**: Agile, Scrum.

**Languages**: Spanish(C2), Italian (C1), English (B2), German (Beginner).

**Interest**: Numerical Methods, Data analysis, Quantum Computing, knot theory, TQFT, [digital-art](https://www.behance.net/pabalres), hiking, climbing.

# PERSONAL PROJECTS

[**Particle on a Magnetic field**](https://github.com/Pablichenco/ParticleMagnetic): Utilized a **Runge-Kutta 4th order** numerical model to solve linear differential equations, visualizing results with [plot.ly](https://chart-studio.plotly.com/~pablichenco/123/#/)

[**Wave equation**](https://github.com/Pablichenco/Crank-Nicolson-Method-PDE): Applied a **Crank-Nicolson method** in **FORTRAN** to solve a partial differential equation, producing accurate physics simulations.