

Sergio Alejandro Rosales Vargas

M.Sc. SPACE ENGINEERING

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Personal Profile

Adaptability is my main trait, I love exploring new hobbies and being challenged. My experience has forged my team work skills and fast thinking. My curiosity and perseverance are my core skills to achieve my goals and approach innovative solutions to problems.

Education

University of Bremen

M.Sc. in Space Engineering

Bremen, Germany

April 2022 - May 2025

- **Master thesis:** Analysis of an Active Thermal Control System for the Avionics Equipment for Future Upper-Stages of a Launcher System.
- **Master project:** Research in techniques to mitigate errors of CNNs in radiation space environments.
- **Courses:** Trajectory Optimization, Spacecraft Navigation and Control, Communications Technologies for Space, Concurrent Engineering, FEM simulations for the design of space systems, Fluid Handling in spacecrafts, Structural design and analysis, Control theory, Orbital systems.

Catholic University of Bolivia “San Pablo”

Bachelor Degree in Mechatronics Engineering

Cochabamba, Bolivia

February 2013 - February 2018

- Graduated with Honor Distinction: Top of the 2018 class.
- **Bachelor thesis:** Design and development of a prototype robot to detect cracks in drinking water pipes using Convolutional Neural Networks.
- **Skills covered:** Automation and control engineering, Signal processing, Fluid mechanics and thermodynamics, Vector mechanics.

Work Experience

ArianeGroup JTMU 5

Werkstudent

Bremen, Germany

July 2023 - June 2024

- Part time student job as support for thermal tasks in JTMU 5.
- Support in multiple discipline tasks related to:
 - ✓ Developed an automated migration from Bazaar to Git using Python.
 - ✓ Post processing of data for interfaces purposes in MATLAB and Python.
 - ✓ Automation of ESATAN script generation through Python and Matlab post-processing.
- Support for the thermal model design with ESATAN and ESARAD.
- **Soft Skills:** Adaptability, Communication, Decision-Making, Teamwork, Resource Management.

IMEMED

Research and Development Engineer

Cochabamba, Bolivia

April 2020 - March 2022

- Developed and manufactured the company's first medical equipments:
 - ✓ The first intensive care unit medical ventilator in Bolivia.
 - ✓ A X-Ray portable machine of 2DOF.
 - ✓ Prototype of a PSA oxygen concentrator plant of $180 \text{ m}^3 \text{ h}^{-1}$.
- Support for software development for back-end and front-end solutions in C#, Wpf.
- Led the electronics design team and managed the design process of PCB prototypes using Altium Designer for the ICU ventilator from the conceptualization up to manufacturing and testing in the span of 2 years.
- Carried out technical presentations to business partners, governmental institutions and medical facilities.
- Carried out negotiations with international technology partners, such as Masimo, Bürkert and Demcon to reach OEM solutions for product acquisition deals.
- **Soft Skills:** Leadership, Communication, Decision-Making, Teamwork, Resource Management, Negotiation skills.

Catholic University of Bolivia “San Pablo”

University lecturer

Cochabamba, Bolivia

July 2020 - December 2020

- Teaching of the subject “Physics Fundamentals” for newly admitted students.

AGROINBO TFD

Control and Automation Engineer

Cochabamba, Bolivia

November 2018 - December 2019

- Designed and implemented the complete system of automation for the process of dehydration of almonds which improved productivity of the company in 300% and reduced time duration of production in 80%.
- Designed the electric layout using CAD modeling tools and executed the implementation of the cable net connection.
- Characterized the system and designed a thermal mathematical model of the almond ovens through sensor measurements.
- Conceptualization and implementation of a closed loop control system using a LOGO PLC to fully automate the production lines.
- Designed the peripherals for the system automation and programmed the safety routines for the controller.
- **Technical Skills:** MATLAB, Simulink, Ladder programming, LOGO! Soft Comfort, AutoCAD Electrical.
- **Soft Skills:** Problem-solving, Constraint optimizations, Resourcefulness, Logical thinking.

Publications

CONFERENCE PROCEEDINGS

Effect of Single Event Transient Errors on Convolutional Neural Networks for Space Applications

Sergio Alejandro Rosales Vargas, Alberto García-Ortiz

2024 13th International Conference on Modern Circuits and Systems Technologies (MOCASST), 2024

Volunteering

Avionics Team Member

ASTRA e.V.

Cochabamba, Bolivia

November 2022 - January 2024

- Electronics designs prototyping, soldering and GPS sensor integration.
- Flight computer programming and testing the elements of the Kármán Project Rocket.

Instructor Volunteer Team Member

IILC Latinamerican Institute of Leadership Cristóforos

Cochabamba, Bolivia

May 2018 - November 2019

- Instruction and planning of the oratory courses.

IEEE Student Branch Chair

IEEE Student Branch of the Catholic University of Bolivia "San Pablo" - Cochabamba

Cochabamba, Bolivia

January 2018 - January 2019

- Founding member of the first IEEE Student Branch of the Catholic University of Bolivia "San Pablo" - Cochabamba.
- Management of the Student Branch, scheduling of activities and handling of recruitment.

Logistics Team Member

TEDx UCB Cochabamba

Cochabamba, Bolivia

May 2017 - August 2018

- Management of logistics activities of the first TEDx event in Cochabamba.

Professional development

- 2021 **Digitalization in the Aerospace Industry**, Technical University of Munich [🔗](#) (Click to view)
- 2021 **Solidworks CSWP - Professional Mechanical Design**, Dassault Systèmes [🔗](#) (Click to view)
- 2021 **Spacecraft Dynamics and Control**, University of Colorado Boulder in partnership with Coursera [🔗](#) (Click to view)
- 2021 **Goethe-Zertifikat B2**, Goethe Institut
- 2018 **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization**, DeepLearning.AI [🔗](#) (Click to view)
- 2018 **Neural Networks and Deep Learning**, DeepLearning.AI [🔗](#) (Click to view)

Extracurricular Projects

- Management and organization of the mechanical design team and scheduling of the tasks.
- Machining and assembly of the electrical and mechanical systems.

Skills

Programming	MATLAB, Simulink, Simscape, C/C++, C# (Front-end, Back-end), Wpf, Python (Pandas, NumPy, Tensorflow), VBA, R, PLC Programming, SCADA, ESATAN, ESARAD
CAD Design	AutoCAD, SolidWorks, Ansys Mechanical, Altium Designer, Eagle Designer.
Soft Skills	Leadership, Adaptability, Decision-Making, Communication, Teamwork, Resource Management, Negotiation skills, Presentation skills, Perseverance, Assertiveness.
Miscellaneous	TeX(Overleaf/MikTeX), Microsoft Office, Git, GitHub, Bitbucket, Jira.
Languages	English (C1), Spanish (C2), German (B2), French (A1).