

# Sergio Alejandro Rosales Vargas

STUDENT · M.Sc. SPACE ENGINEERING

Max Von Laue Straße 5, 28359 Bremen

☎ +49-163-8917040 | ✉ rosalessergius@gmail.com | 🌐 sergio-alejandro-rosales-vargas

“Aim to the stars.”

## Personal Profile

I am a student of the Space Engineering master program. Mechatronics engineer who likes challenges and learning new things. I see myself as a passionate person with perseverance, thoughtfulness and perceptiveness. Always ready to expand my abilities and skills. Currently looking for positions in Space Technology and Development.

## Education

### University of Bremen

Bremen, Germany

M.Sc. in Space Engineering

April 2022 - Current

- **Master thesis:** Analysis of an Active Thermal Control System for the Avionics Equipment for Future Upper-Stages of a Launcher System.
  - Python, ESATAN and ESARAD modeling.
- **Master project:** Research in techniques to mitigate errors of CNNs in radiation space environments.
  - Python, C and C++ development benchmark development with Tensorflow.
- **Courses:** 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”

Cochabamba, Bolivia

Bachelor Degree in Mechatronics Engineering

February 2013 - February 2018

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

### La Salle High School

Cochabamba, Bolivia

High School Diploma

December 1999 - December 2012

- Passed with Distinctions.

## Work Experience

### ArianeGroup JTMU 5

Bremen, Germany

Werkstudent

July 2023 - June 2024

- Part time student job as support for thermal tasks in JTMU 5.
- Support in multiple discipline tasks related to:
  - ✓ Develop fully automated migration of Version Control Systems from Bazaar to Git using Python.
  - ✓ Post processing of data for interfaces purposes in Python.
  - ✓ Automation of ESATAN script generation through Python and Matlab post-processing.
- Support in simulations for both geometrical and thermal models tasks with ESATAN and ESARAD.
- **Technical Skills:** ESATAN, ESARAD, MATLAB, Python, Bazaar, Git, Bitbucket, Jira.
- **Soft Skills:** Adaptability, Communication, Decision-Making, Teamwork, Resource Management.

## IMEMED

### Research and Development Engineer

Cochabamba, Bolivia

April 2020 - March 2022

- Full time job in collaborative research and development of medical equipment.
- 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  $180 \text{ m}^3 \text{ h}^{-1}$ .
- Collaborated with the software development team in back-end and front-end solutions for the 3 prototype equipments.
- Led the electronics design team and managed the design process of PCB prototypes 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 in 3 regions of the country.
- Carried out negotiations with international technology partners, such as Masimo, Bürkert and Demcon to reach OEM solutions for the company and product acquisition deals.
- **Technical Skills:** Altium Designer, Eagle Designer, C#, Wpf, C++, Solidworks, MATLAB, Simulink, Microsoft Office,  $\text{\LaTeX}$ .
- **Soft Skills:** Leadership, Adaptability, Communication, Decision-Making, Teamwork, Resource Management, Negotiation skills, Presentation 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.
- **Soft Skills:** Creativity, Integrity, Empathy.

## 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

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### CONFERENCE PROCEEDINGS

## Volunteering

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### Avionics Team Member

#### ASTRA e.V.

Cochabamba, Bolivia

November 2022 - January 2024

- Electronics designs prototyping, soldering and testing.
- Flight computer programming and testing the elements of the Kármán Project Rocket.
- GPS sensor integration into the main system.
- Support in ASTRA's technical and non-technical activities.

### Instructor Volunteer Team Member

#### IILC Latinamerican Institute of Leadership Cristóforos

Cochabamba, Bolivia

May 2018 - November 2019

- Volunteer during leadership and oratory courses.
- Instruction and planning of the activities in 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 recruitment and promotion of events.
- Scheduling and planning of technical and non-technical activities for the Student Branch.
- Interface between other branches of the region.

### Logistics Team Member

#### TEDx UCB Cochabamba

Cochabamba, Bolivia

May 2017 - August 2018

- Member of the management team of the first TEDx event in Cochabamba.
- Management of logistics activities of assets needed in the main event.

## Achievements

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2021	<b>Digitalization in the Aerospace Industry</b> , Technical University of Munich <a href="#">🔗</a> (Click to view)	<a href="#">Bolivia</a>
2021	<b>Solidworks CSWP - Professional Mechanical Design</b> , Dassault Systèmes <a href="#">🔗</a> (Click to view)	<a href="#">Bolivia</a>
2021	<b>Specialized Program - Spacecraft Dynamics and Control</b> , University of Colorado Boulder in partnership with Coursera <a href="#">🔗</a> (Click to view)	<a href="#">Bolivia</a>
2021	<b>Goethe-Zertifikat B2</b> , Goethe Institut	<a href="#">Bolivia</a>
2018	<b>Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization</b> , DeepLearning.AI <a href="#">🔗</a> (Click to view)	<a href="#">Bolivia</a>
2018	<b>Neural Networks and Deep Learning</b> , DeepLearning.AI <a href="#">🔗</a> (Click to view)	<a href="#">Bolivia</a>

## Extracurricular Projects

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### Development of a hybrid solar car

[Cochabamba, Bolivia](#)

Catholic University of Bolivia “San Pablo”

*June 2016 - November 2016*

- Member of the student group that conceptualized and to developed a hybrid solar car for the university.
- Collaboration in the design of the mechanical structure of the “Catomóvil” prototype.
- Management and organization of the mechanical design team and scheduling of the tasks.
- Machining and performance testing of the mechanical structure.
- Integration and assembly of the electrical and mechanical systems.
- **Technical Skills:** Solidworks, TIG Soldering, Bender.
- **Soft Skills:** Collaborative work, Mechanical skills, Time Management.

## Skills

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<b>Programming</b>	MATLAB, Simulink, Simscape, C/C++, C# (Front-end, Back-end), Wpf, Python (Pandas, NumPy, Tensorflow), VBA, R, PLC Programming, SCADA.
<b>CAD Design</b>	AutoCAD, SolidWorks, Ansys Mechanical, Altium Designer, Eagle Designer.
<b>Soft Skills</b>	Leadership, Adaptability, Decision-Making, Communication, Teamwork, Resource Management, Negotiation skills, Presentation skills, Perseverance, Assertiveness.
<b>Thermal Design</b>	ESATAN, ESARAD.
<b>Miscellaneous</b>	$\LaTeX$ (Overleaf/MikTeX), Microsoft Office, Git, GitHub, Bitbucket, Jira.

## Languages

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<b>English</b>	Professional proficiency C1
<b>Spanish</b>	Native proficiency C2
<b>German</b>	Advanced proficiency B2
<b>French</b>	Basic proficiency A1