Sergio Alejandro Rosales Vargas

STUDENT · M.SC. SPACE ENGINEERING

Max Von Laue Straße 5, 28359 Bremen

📱 +49-163-8917040 | ✉ rosalesergius@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:** 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"
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 *Cochabamba, Bolivia*

Research and Development Engineer *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 $m^3\ h^{-1}$.
- 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, LaTeX.
- **Soft Skills:** Leadership, Adaptability, Communication, Decision-Making, Teamwork, Resource Management, Negotiation skills, Presentation skills.

Catholic University of Bolivia "San Pablo" *Cochabamba, Bolivia*

University lecturer *July 2020 - December 2020*

- Teaching of the subject "Physics Fundamentals" for newly admitted students.
- **Soft Skills:** Creativity, Integrity, Empathy.

AGROINBO TFD *Cochabamba, Bolivia*

Control and Automation Engineer *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 (MOCAST), 2024

Volunteering

Avionics Team Member *Cochabamba, Bolivia*

ASTRA e.V. *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 *Cochabamba, Bolivia*

IILC Latinamerican Institute of Leadership Cristóforos *May 2018 - November 2019*

- Volunteer during leadership and oratory courses.
- Instruction and planning of the activities in oratory courses.

IEEE Student Branch Chair *Cochabamba, Bolivia*

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

Cochabamba, Bolivia

TEDx UCB Cochabamba

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

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

Extracurricular Projects

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

Programming	MATLAB, Simulink, Simscape, C/C++, C# (Front-end, Back-end), Wpf, Python (Pandas, NumPy, Tensorflow), VBA, R, PLC Programming, SCADA.
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.
Thermal Design	ESATAN, ESARAD.
Miscellaneous	LaTeX(Overleaf/MikTeX), Microsoft Office, Git, GitHub, Bitbucket, Jira.

Languages

English	Professional proficiency C1
Spanish	Native proficiency C2
German	Advanced proficiency B2
French	Basic proficiency A1

Sergio Alejandro Rosales Vargas

STUDENT · M.SC. SPACE ENGINEERING

Max Von Laue Straße 5, 28359 Bremen

📱 +49-163-8917040 | ✉ rosalesergius@gmail.com | in sergio-alejandro-rosales-vargas

"Aim to the stars."

POLARIS Raumflugzeuge GmbH Hiring Manager   *March 18, 2025*

ZUM PANREPEL 11

28307 BREMEN

Reference: Application for "GNC Engineer"

Dear Hiring Manager,

My name is Sergio Rosales, and I am writing to express my interest for the position of *GNC Engineer* at POLARIS. With my background in design of robust systems, hands-on experience in R&D, and involvement in diverse software development projects, I am confident that my skills are well suited for the position.

During my Master in Space Engineering project I focused on control theory, orbital mechanics and trajectory optimization. My recent involvement in the thermal engineering team at ArianeGroup further deepened my understanding of aerospace design processes and reinforced my ability to work in multidisciplinary teams. In addition to that, during time in IMEMED, I led the electronics design team, working in embedded systems development, which involved solving complex technical challenges in real-world applications.

Additionally, as a member of the avionics team in the student initiative ASTRA e.V., I contributed to the design of a rocket that aims to reach the Kármán line. My experience there included the use of sensor fusion for attitude determination. Similarly, at AGROINBO, I automated an almond dehydration system with a PI PLC-controlled closed-loop architecture. This required balancing thermal dynamics of the system; a knowledge transferable to the optimization of GNC subsystems. While my direct experience in flight controller coding is minimal, my proficiency in Python and MATLAB/Simulink provides a strong foundation for rapid upskilling in trajectory optimization tools like STK or ROS.

I share POLARIS Raumflugzeuge GmbH's commitment to innovation, efficiency, and technical excellence. This makes me eager to seize the opportunity of growing my leadership skills, refining collaborative problem-solving in multidisciplinary environments and expanding my professional knowledge.

I'm ready to bring my experience in embedded systems and start as a GNC engineer in the company bringing my technical and leadership skills to the field. I appreciate your consideration and welcome the opportunity to discuss the position.
I look forward to your reply.

Sincerely,

Sergio Alejandro Rosales Vargas