Sergio Alejandro Rosales Vargas

STUDENT · M.SC. SPACE ENGINEERING

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"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.
- **Master project:** Research in techniques to mitigate errors of CNNs in radiation space environments.
- **Courses:** 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:
  - ✓ Migration of Version Control Systems using Bazaar and Git.
  - ✓ Post processing of data for interfaces purposes.
  - ✓ Automation of processes through Python and Matlab scripting.
- Support in thermal simulations tasks with ESATAN, ESARAD and Thermal.
- **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.
- Programming flight computer and testing the elements of the Kalman Project Rocket.
- 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	**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*
2020	**TOEFL iBT**, ETS	*Bolivia*
2018	**Specialization in Automation and Industrial Control**, Ideas Automation with sponsorship of Schneider Electric	*Bolivia*
2013	**Full founded Coca-Cola scholarship for bachelors degree**, Coca-Cola Foundation	*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