

# Angel Zenteno

RESEARCH ASSISTANT

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## Summary

The incredible pace of research and new discoveries in artificial intelligence points to a very exciting future. Researchers are making great advances towards achieving human-level intelligence in computers. As a computer science research assistant, I am passionate about advancing the current state of the art. I am ready to take the next step and continue developing my skills by pursuing a master's degree.

## Education

### UPB(Universidad Privada Boliviana)

B.S. IN COMPUTER SYSTEMS ENGINEERING

- Graduated with honors, Summa Cum Laude.
- CGPA 93.5/100

Cochabamba, Bolivia

Feb. 2017 - Jul. 2021

## Experience

### CINTI - Research Center for New Computer Technologies - UPB (Universidad Privada Boliviana)

RESEARCH ASSISTANT

- Data collection, processing, and implementation of a recurrent neural network for automatic spectrometer calibration using TensorFlow.
- Data collection, processing, and implementation of a convolutional neural network for automatic detection of chemical elements with TensorFlow. Fine-tuned an EfficientDet model.
- Implementation of a spectrometry application for mobile phones using Flutter and deployment of TensorFlow Lite models.
- Implementation of a spectrometry application for Raspberry Pi using Python and OpenCV for image processing.
- Development of a distributed GitHub scrapper used to massively retrieve and analyze open source code repositories using NodeJS and MQTT.
- Development of a REST API using Django for a spectrometry remote lab, this allows users to visualize the experiments with a web camera, manipulate remotely the spectrometer, and collect spectral data.
- Development of a REST API using Django for a remote laboratory booking system, allowing users to book and manage appointments for various types of experiments and tests, including spectrometry. The API allows users to view available time slots, reserve a slot, and manage their appointments. Open Source project.

Cochabamba, Bolivia

Jun. 2021 - Present

### Truextend

SOFTWARE ENGINEER INTERN

- Deployment of internal applications using Docker and GitLab CI/CD.
- Implementation of animations using Angular and SASS.
- Updating internal documentation on how to run the apps and services.

Cochabamba, Bolivia

Jul. 2020 - Aug. 2020

## Publications

### CINTI - Research Center for New Computer Technologies

- **Zenteno, A.**, Orellana, A., Villazon, A., Ormachea, O. (2023). Automatic Selection of Reference Lines for Spectrometer Calibration with Recurrent Neural Networks, SmartTech-IC 2022.
- Ormachea, O., Villazon, A., Orellana, A., **Zenteno, A.** (2023). A low-cost 3D-printed spectrometer based on Raspberry Pi, RIAO/OPTILAS. (Preprint)
- Villazon, A., Ormachea, O., Orellana, A., **Zenteno, A.**, Fransson T. (2023). Work in Progress: A Booking System for Remote Laboratories - The EXPLORE Energy Digital Academy (EEDA) case study, REV2023 Conference.
- Villazon, A., Ormachea, O., **Zenteno, A.**, Orellana, A. (2023). A Low-Cost Spectrometry Remote Laboratory. In: Auer, M.E., El-Seoud, S.A., Karam, O.H. (eds) Artificial Intelligence and Online Engineering. REV 2022. Lecture Notes in Networks and Systems, vol 524. Springer, Cham.
- Rosales E., Rosa A., Basso M., Villazon, A., Orellana, A., **Zenteno, A.**, et al (2022). Characterizing Java Streams in the Wild, 26th International Conference on Engineering of Complex Computer Systems (ICECCS).

## Projects

### NASA SPACE APPS CHALLENGE

- Development of a web platform to explore papers published by NASA, we used a large language model to summarize more than 300.000 papers. Implemented a semantic search engine converting summaries into embeddings. These were also used to visualize papers as a connected graph. Winning project.

### "DIVE INTO READING" HACKATHON

- Development of a virtual reality video game to encourage reading, we used language models to generate quizzes of any book. Finalist project.

## LOGO DIFFUSION

- The prototype aims to fine-tune Stable Diffusion models to create high-quality logos by training them on a dataset of logos and adjusting their parameters to produce unique logos.

## CHAR-RNN

- Character-level language model for text-based data. Char-RNN takes in a sequence of characters as input and attempts to generate a sequence of characters as output. It is designed to be used as a template for building and training Char-RNN models for various types of text-based data.

## Honors & Awards

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- 2022 **Winner**, NASA Space Apps Challenge Bolivia. Challenge "Can AI preserve our science legacy?"
- 2022 **Finalist**, "Dive into Reading" Hackathon, organized by the Embassy of the United States in Bolivia.
- 2021 **Winner**, graduation with honors, Summa Cum Laude.
- 2021 **Winner**, excellence scholarship, granted to top 3 best students in the engineering faculty.
- 2020 **Winner**, honor roll.
- 2019 **Winner**, honor roll.
- 2018 **Winner**, honor roll.
- 2017 **Winner**, a 50% scholarship granted by UPB to the top-performing students in a math and verbal reasoning exam.

## Additional Courses

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### Machine Learning - CS229

Online

STANFORD ONLINE - FREE

Jun. 2022

- Fundamentals of machine learning, including supervised and unsupervised learning, neural networks, support vector machines, reinforcement learning, and adaptive control.

### Deep Learning - CS230

Online

COURSERA

Oct. 2022

- Learned about the fundamentals of deep learning including neural networks, convolutional neural networks, recurrent neural networks, and transformers

### Natural Language Processing with Deep Learning - CS224n

Online

STANFORD ONLINE - FREE

Mar. 2023

- The course covers the basic concepts and ideas in Natural Language Processing. Start with word-level and syntactic processing and move on to question answering, and machine translation. Finally, apply a complex neural network model to a large-scale NLP problem for final project.

### Deep Reinforcement Learning Course

Online

HUGGING FACE

Mar. 2023

- Deep Reinforcement Learning (Deep RL) with well-known libraries such as Stable Baselines3, RL Baselines3 Zoo, Sample Factory, and CleanRL.

### Design and 3D printing

Online

UPB

Feb. 2023

- Design with Fusion 360 and 3D slicing with Ultimaker Cura

## Skills

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Python, SQL, git, sklearn, NumPy, Pandas, PyTorch, TensorFlow, Django, Flutter, MQTT and Docker.

## Languages

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**English** C1 - advanced: TOEFL score 106 / 120

**Spanish** Native