

# Alan Preciado Grijalva

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**LINKEDIN** [alan-preciado-grijalva](#) **GITHUB** [agrija9](#) Google Scholar US / Mexican Citizen

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## Education

### University of Applied Sciences Bonn-Rhein-Sieg, Germany

Mar 2019 - Nov 2021

M. SC. AUTONOMOUS SYSTEMS - CURRENT GPA 3.72/4.0

Major in Machine Learning

Relevant Coursework: Artificial Intelligence, Machine Learning, Neural Networks, Deep Learning, Natural Language Processing, Mathematics for Robotics and Control, Robot Perception

Thesis: Self-supervised Learning for Sonar Images: Enhancing Multimodal Perception for Underwater Applications

### Autonomous University of Baja California, Mexico

Feb 2013 - Dec 2017

B. SC. PHYSICS - GPA 4.0/4.0

Honors Degree

Thesis: Microstructures for a Scalable Multi-layer Ion Trap for Quantum Information Processing

### University of Gottingen, Germany

Aug 2016 - Aug 2017

B. SC. PHYSICS STUDENT EXCHANGE

DAAD Scholarship Holder

Relevant Coursework: Biophysics, Statistical Mechanics, Soft-matter, Machine Learning

## Interests

: Machine Perception, Learning and Reasoning, Computer Vision, Robotics, Generative Modeling

## Experience

### Machine Learning Research Assistant

Oct 2020 - present

GERMAN RESEARCH CENTER FOR ARTIFICIAL INTELLIGENCE (DFKI) GMBH, BREMEN, GERMANY

- Project: Improve the perception capacities of underwater systems using deep learning multi-modal approaches
- Contribution: Implemented self-supervised learning algorithms in tensorflow for underwater sonar image classification, and image translation algorithms for image enhancement
- Contribution: creation of a new underwater image dataset, implemented ROS nodes for data logging (camera-sonar), post-processing hundreds of gigabytes of data
- Impact: Team will benefit from created dataset, poster published at conference, algorithms implemented on pair with supervised approaches

### Machine Learning Research Assistant

Aug 2019 - Mar 2021

FRAUNHOFER INSTITUTE FOR ALGORITHMS AND SCIENTIFIC COMPUTING (SCAI), BONN, GERMANY

- Project: Detect anomalies due to ice accumulation in wind turbines, achieve high-quality reconstruction of 3D CFD turbulence data
- Contribution: Performed unsupervised anomaly detection of time series using generative models (Variational Autoencoders). Achieved 96% classification accuracy on custom wind turbine simulation time series data
- Contribution: Implemented Convolutional Variational Autoencoders on 2D and 3D turbulent data for high-quality reconstruction and generation.
- Impact: Provided first insights into wind turbine data interpretability, results were presented to partner company

### Technical Consultant

Oct 2018 - Mar 2019

UNITED HEALTH GROUP INC., CYPRESS, UNITED STATES

- Contribution: Developed tools using relational databases (SQL and Microsoft Access) to automate the workflow for the creation of contracts. This reduced time taken to generate contracts significantly.

**Physics Research Assistant**

Mar 2017 - Sep 2017

NATIONAL METROLOGY INSTITUTE OF GERMANY (PTB), BRUNSWICK, GERMANY

- Project: Design, build, characterize and experiment with novel ion traps for quantum computing
- Contribution: Built and characterized state-of-the art micro semiconductors (ion traps) for quantum computing experiments
- Contribution: Worked in ultra clear room systems doing gold layer deposition, sputtering, performed ion trap characterization via high resolution microscopy and electrical breakdowns
- Impact: Results helped my group understand better the limits and operating conditions of multi-layered ion traps, paper published, conference presentation

**Publications & Talks**

Venkata Santosh Muthireddy\*, **Alan Preciado-Grijalva**\*. [Evaluation of Deep Neural Network Domain Adaptation Techniques for Image Recognition](#). Arxiv, 2021.

Matias Valdenegro-Toro, **Alan Preciado-Grijalva**, Bilal Wehbe. [Pre-trained Models for Sonar Images](#). Global OCEANS, 2021.

Ramon F. Brena, Evelyn Zuvirie, **Alan Preciado**, Aristh Valdiviezo, Miguel Gonzalez-Mendoza Carlos Zozaya-Gorostiza. [Automated evaluation of foreign language speaking performance with machine learning](#). International Journal on Interactive Design and Manufacturing (IJIDeM), 2021.

**Alan Preciado-Grijalva**, Rodrigo Iza-Teran, Paul G. Ploeger. [Generative Models for the Analysis of Dynamical Systems with Applications](#). Bonn-Rhein-Sieg University of Applied Sciences, Technical Report, 2020.

A. Bautista-Salvador, H. Hahn, G. Zarantonello, **A. Preciado-Grijalva**, J. Morgner, M. Wahnschaffe, C. Ospeklaus. [Multilayer ion trap technology for scalable quantum computing and quantum simulation](#). New Journal of Physics, 2019.

**Alan Preciado-Grijalva**, Ramon Brena. [Speaker fluency level classification using machine learning techniques](#). Arxiv, 2018.

Poster - LatinX in CV @ICCV2021.

Oct 2021

Poster - International Meeting of Artificial Intelligence and its Applications (RIIAA).

Aug 2018

Poster - Quantum Information Division annual meeting (DICU).

Sep 2015 &amp; 2017

Poster - National Nanoscience and Nanomaterials Symposium (CNyN)

May 2016

**Internships****Junior Software Engineer**

Jan 2018 - Apr 2018

SOFTEK, ENSENADA, MEXICO

- Designed a webapp using .NET technologies with an emphasis on entity framework. Tools used: C#, SQL, CSS and Javascript

**Machine Learning Intern**

May 2018 - September 2018

INSTITUTO TECNOLÓGICO DE MONTERREY (ITESM), MONTERREY, MEXICO

- Trained machine learning and deep learning models to classify audio segments of conversations based on their level of fluency audio segments to input the feature vectors into different models

**Physics Research Intern**

Jun 2015 - September 2015

JOINT QUANTUM INSTITUTE (JQI), UNIVERSITY OF MARYLAND, USA

- Built an optical switch with a vacuum chamber and a putting the tapered optical nanofiber to be able to manipulate the intensity transmission of a 1064 nm laser

**Selected Projects**[Image Captioning with Attention](#)

Jun 2020 - Jul 2020

[Deep Learning for Domain Adaptation](#)

Feb 2020 - Apr 2020

[Rosbag Analyzer](#)

Oct 2019 - Jan 2020

[Environmental Sound Classification](#)

May 2018 - Jul 2018

**Skills**

Programming / Frameworks: Python, C#, Matlab, Pytorch, Tensorflow 2, Keras, ROS, Flask

Libraries / Tools: OpenCV, Scikit, Pandas, Numpy, Seaborn, Git, Linux,  $\LaTeX$

Languages: Spanish (native), English (Toefl IBT 101), German (B2)

## Activities

LatinXAI Volunteer @ICLR, @CVPR

Git Tutor for graduate students - Hochschule Bonn-Rhein-Sieg, Germany

May 2020 & June 2021

Feb 2020