Alan Preciado Grijalva

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Education

University of Applied Sciences Bonn-Rhein-Sieg, Germany Mar 2019 - Oct 2021
M. SC. AUTONOMOUS SYSTEMS

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

Honors Degree (94.45/100)
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

Research Assistant Oct 2020 - present
GERMAN RESEARCH CENTER FOR ARTIFICIAL INTELLIGENCE (DFKI) GMBH, BREMEN, GERMANY

- Implemented self-supervised learning algorithms in tensorflow for underwater sonar image classification, object detection and image translation
- Implemented image-to-image translation techniques (Pix2Pix, CycleGAN, Contrastive Unpaired Translation) for multimodal underwater image enhancement
- Helped creating a multimodal image dataset (sonar and camera): implemented ROS nodes for data logging, post-processing of a few hundreds of gigabytes of data to generate a multiple purpose sonar dataset

Research Assistant Aug 2019 - Mar 2021
FRAUNHOFER INSTITUTE FOR ALGORITHMS AND SCIENTIFIC COMPUTING (SCAI), BONN, GERMANY

- Pre-processing of multi-variate wind turbine time series simulation data. Pytorch implementation of a variational LSTM recurrent autoencoder for time series clustering
- Performed unsupervised anomaly detection of time series. Achieved 96% classification accuracy between normal and abnormal wind turbine time series
- Pre-processing of 2D and 3D turbulent data from HVAC ducts: wrote scripts to visualize 3D turbulence data and performed custom data normalization

Technical Consultant Oct 2018 - Mar 2019
UNITED HEALTH GROUP INC., CYPRESS, UNITED STATES

- 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.

Research Assistant Mar 2017 - Sep 2017
NATIONAL METROLOGY INSTITUTE OF GERMANY (PTB), BRUNSWICK, GERMANY

- Built and characterized micro-arrayed semiconductors (ion traps) for quantum computing experiments
- Worked in ultra clear room systems doing gold layer deposition, sputtering and performed ion trap characterization via high resolution microscopy and electrical breakdowns
- Obtained results that helped my group understand better the limits and operating conditions of multi-layered ion traps

Publications

Venkata Santosh Sai Ramireddy 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. Ospelkaus. 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.

Internships

Junior Software Engineer Jan 2018 - Apr 2018
SOFTTEK, 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 TECNOLOGICO 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

Research Intern Jun 2015 - September 2015
JOINT QUANTUM INSTITUTE (JQI), UNIVERSITY OF MARYLAND, USA

- Built an optical switch with a vaccuum 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

Research Talks

Science Faculty, Autonomous University of Baja California (Talk). — Nov 2020
International Meeting of Artificial Intelligence and its Applications (RIIAA) (Poster). — Aug 2018
Quantum Information Division annual meeting (DICU) (Poster). — Sep 2015 & 2017
National Nanoscience and Nanomaterials Symposium (CNyN) (Posster) — May 2016

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 — May 2020 & June 2021
Git Tutor for graduate studetns - Hochschule Bonn-Rhein-Sieg, Germany — Feb 2020