Joseph Vergel

Machine Learning Engineer

Calle 75#52B-221, Apto. 204, Medellín, Colombia

+57 3187042914

joseph@guane.com.co

About me

A self-motivated professional with excellent team-work and communication, research and good coding skills, enthusiastic to learn and always do my best in any work

Skills

Python

TensorFlow

Keras

PyTorch

Scikit-Learn

PySpark

Docker

GCP

Linux

Go

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

Interests

Critical, curious and passionate about transforming domain knowledge of any real-world problem into data science solutions. At the same time, thirsty by convert machine learning and deep learning deployments in real products. A self-motivated professional by research and machine learning. Among other passions are statistical mechanics, quantum mechanics and rugby

Areas of Knowledge

- Experience on different Natural Language Processing (NLP) tasks like text classification, Neural Machine Translation (NMT) and Named Entity Recognition (NER)
- Statistical and computational intelligence methodologies for time series forecasting
- Object detection and segmentation (binary and semantic) for information retrieval in digitized documents
- Good software coding skills for python microservices of data science life cycle with tools like FastAPI, pydantic and flask
- Proficiency with container development and deployments with Docker
- Classical machine learning implementations with scikit-learn, H2O and SparkML
- Deep learning implementations of several architectures like convolutional neural networks (CNN), recurrent neural networks (RNN), encoder-decoder and transformers, with most popular frameworks like PyTorch, Tensorflow and Keras
- Google Cloud Platform (GCP) and Azure Databricks experience
- Good knowledge of new technologies in general
- Experience leading a team of eight people

Professional Experience

2020 — Lead Machine Learning Engineer at charlibot.ai - guane Enterprises

Focus on efficient deployment of deep learning models for NLP on microservice architectures

- Data workflows designs for cognitive platform and APIs
- Building pre-processing and post-processing microservices
- Develop and deployment of deep learning models

2019 — Data science instructor at Universidad de Antioquia (UdeA)

Teacher for the artificial intelligence introductory course in medicine fields "HealthCare - 4.0"

2019 — Senior Machine Learning Engineer at InterGrupo-XM, ISA Subsidiary

Electrical generation and load (demand) forecasting cloud platform

- Statistical load forecasting and computational intelligence (deep learning) generation forecasting
- Azure Databricks and Data Factory implementations in Spark

2018 — Data Scientist at guane Enterprises

Design and implementation of different prototypes and proof of concept

- Medical triage system based on machine learning
- Fuel consumption optimization from On-Board Diagnostics data

2017 — Junior Data Scientist at Alliance Universidad Industrial de Santander (UIS) and Instituto Colombiano del Petróleo (ICP)

Developed a hidrocarbon

- Seismic and well log data statistical analysis and implementation of Monte Carlo methods for pseudo-well log generation
- Prototyping of classical machine learning algorithms for facies (rock body layers with specific features) classification

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Research Experience

2019 — Indirect Characterization of Transmittance Thin Films Through Orbital Angular Momentum and Convolutional Neural Networks at Universidad de Antioquia and Universidad Industrial de Santander

Redesign and implementation of scientific computing and deep learning algorithms

- Numerical simulation of Bessel-Gauss and Laguerre-Gauss beams for Orbital Angular Momentum (OAM) image generation
- Implementation of Convolutional Neural Networks (CNN) for OAM image classification

2018 — Using Highperformance Computing to Obtain Spectrocpic Signals at Grupo de Física Atómica y Molecular, UdeA

Redesign and implementation of scientific computing algorithms

- Use of automatic differentiation algorithms for optimization
- Quantum optimal control for seeking spectroscopic signals

2017 — Three-Dimensional Reconstruction of Human Skulls by Optical Methods at Grupo de Óptica y Tratamiento de Señales, UIS

Developed a variety of multidisciplinary projects

- Sthereophogrammetry and 3D-scan by fringe projection
- Adaptive meshing post-processing

Publications and Oral Presentations

- Vergel, J. and Pachón, L. A. (2019). Floquet Engineering over Chromophores Dimers with Deep Reinforcement Learning. 1st Khipu - Latin American meeting in Artificial Intelligence, Universidad de la República Engineering School (2019) (Montevideo, Uruguay).
- Vergel, J. and Pachón, L. A. (2019). Assisted Optimal Transfer of Excitonic Energy by Deep Reinforcement Learning. Machine learning for quantum matter and technology, 10th School of Mathematical Physics, Universidad de los Andes (2019) (Bogotá, Colombia).
- Vergel, J. and Meneses, J. E. (2017). Remallado isotrópico adaptativo por curvatura local en reconstrucciones tridimensionales de estructuras oseas para aplicaciones en ciencias forenses. En Bistua:Revista de la Facultad de Ciencias Básicas, Universidad de Pamplona-Colombia.15(1):73-88 ISSN 0120-4211.
- Vergel, J., Contreras, C. R., and Meneses, J. E. (2014, November). Interactive mesh and curvature analysis of a 3D point cloud obtained by the fringe projection technique (FPT). In Latin America Optics and Photonics Conference (pp. LTh4A-28). Optical Society of America.

Education

2018-2020 — Universidad de Antioquia (UdeA), Medellín, Colombia

M.Sc. in Physics: "Data-to-Text Generation with Transformers and Energy Based Models"

2010-2016 — Universidad Industrial de Santander (UIS), Bucaramanga, Colombia

B.Sc. in Physics: "Interactive Mesh and Curvature Analysis of a 3D Point Cloud Obtained by the Fringe Projection Technique"

Languages

English (advanced), Spanish (native)

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Schools and short courses

11th-15th 11-2019 — Khipu - Latin American meeting in Artificial Intelligence
1st Khipu
Universidad de la República Engineering School, Montevideo, Uruguay

27th-31th 05-2019 — Machine Learning for Quantum Matter and Technology
10th School of Mathematical Physics
Universidad de los Andes, Bogotá, Colombia

21th-27th 11-2014 — Fiber Optics and Biosensing and also the Instrumentation Workshops
LAOP Workshop 2014
Latin American Optics and Photonics, Cacún, México

10th-16th 11-2014 — Quantum, Nano and Non Linear Optics and also Physical Optics Workshops
LAOP Workshop 2014
Latin American Optics and Photonics, Cacún, México

Interpersonal Skills

- Excellent team-work skills and easily adjust to different situations
- Enthusiastic, proactive and passionate for learning different knowledge branches

Awards

2010 — First position in National University Games (ASCUN)-Rugby

Hobbies

- Rugby player and fan
- Mixed Martial Arts (MMA) fan