Juan Pablo Serrano Pérez

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About

I am a recent Master's degree in Mathematics graduate, driven by a passion for tackling algorithmic and mathematic computational challenges with creativity and rigor. I specialize in the analysis and design of algorithms, aiming to contribute to advancements and efficiency in the fields of computer science, optimization, and mathematical research. I finished my Master's degree in 2024 at department of mathematics at CINVESTAV, CDMX.

Education

Master of Science in Mathematics 2023
Center of Research and Advanced Studies, National Polytechnic Institute, Mexico
Bachelor of Physics and Mathematics 2021
National Polytechnic Institute, Mexico

Projects

Machine Learning Models 2024

1. Time series forecasting: Development of several models to forecast financial time series. The list of models include a Recurrent Network of Long short-term memory and hybrids models of Convolutional Network and LSTM networks.
2. Language processing to sentimental analysis with an LSTM network.

Clustering Algorithm 2023
Developed a clustering algorithm as part of my master's thesis, exploring an unsupervised learning algorithm to investigate recursion in optimal graphs drawings related to the crossing number problem in combinatorial geometry.
Automation and Optimization of Backtesting Strategies 2023
Implemented a Python program that optimizes hyparameters for various technical indicators, evaluating buy and sell strategies for assets.
Arbitrage in Foreign Exchange Markets 2023
Designed an algorithm to find real arbitrage opportunities in the Foreign Exchange/Cryptocurrencie Markets.
Linear programming optimization 2020
Developed Simplex Algorithm in Python to find optimal solutions in a linear programming problem.

Work Experience

Microservices Developer 2021 - 2023
Enterprise Resource Planning Solutions, Mexico
Developing various types of applications, particularly focusing on REST and JSON as well as SOAP and XML applications. I've worked extensively on client-server integration projects, leveraging technologies such as Java, object-oriented programming, OpenShift, and Apache Camel. Moreover, I've had the opportunity to develop OSB (Oracle Service Bus) and SOA (Service-Oriented Architecture) services using Oracle SOA Suite 12c, where I've utilized XML, XSD, XSLT, and XQuery to ensure efficient communication and integration between systems. Throughout my career, I've also become proficient in utilizing essential tools like WebLogic Server, Enterprise Manager, and Oracle Service Bus to streamline development and deployment processes.
Preparatory Master's Course 2023

Center of Research and Advanced Studies, National Polytechnic Institute, Mexico
Taught a preparatory master's course in abstract algebra.

Research

1. *Evolutive sanpiles*, Carlos A. Alfaro, Juan Pablo Serrano, Ralihe R. Villagrán, (2024)
   Status: Sent (arxiv.org/abs/2404.13137)

Skills

Proficient in Python, MATLAB, and Java programming.

Optimization mathematics, linear and non linear optimization.

Strong background in Probability and Statistics.

Analytical and abstract thinker.

Analysis and design of algoritms.

- Data structures
- Randomised algorithms.
- Parallel computing
- Approximation algorithms.
- Combinatorial optimisation.
- Mathematical optimization and linear programming.

Deep learning.

- DL Frameworks like Tensorflow, Keras ans Scikit-Learn.
- Deep learning models.
  - Convolutional Neural Networks.
  - Recurrent Neural Networks.
  - Natural Language Processing, Transformers, Sentimental Analysis.

Activities

Collaborated in the 4th Reunion of Optimization, Mathematics, and Algorithms held in Mexico City.

Strengths

My proactive approach to learning and problem-solving sets me apart. I consistently seek creative solutions, new ideas, and methodologies to address specific challenges, primarily specializing in the field of algorithmic and computational mathematics.

Languages

English: C1 Proficiency level.

References

Dr. Ruy Fabila-Monroy (rfabila@math.cinvestav.mx)

Dr. Onésimo Hernández-Lerma (ohernand@math.cinvestav.mx)

Dr. Carlos A. Alfaro Montúfar (alfaromontufar@gmail.com)

Note: If you cannot click into my My Personal Page, this is the complete URL: https://jpabloserrano.github.io where you may find access to my contact information, coding projects and more about me.