ALFONSO BARAJAS

Data Science Undergraduate Student

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Experience

Software Development Intern Jan-Aug 2021
Subdepartment of Integrated Systems *DGTIC, UNAM*

- Research to improve efficiency on management of teams and time using Agile/Scrum techniques to be implemented on DGTIC´s software development projects. (BDD process)
- Develop schemes of software prototypes based on requirements of the business and UNAM's platform of Intenet services and tablets.

Education

National Autonomous University of Mexico Expected May 2022
Bachelor's degree in Data Science *GPA: 4.0/4.0*

- **Relevant Coursework:** Machine Learning, Data Mining, Probability and Statistics, Relational and NoSQL Databases, Discrete Mathematics, Big Data I and II, Calculus I-IV, Linear Algebra I and II
- **Clubs:** Competitive Programming Club "Pu++" (UNAM) and Club de Algoritmia ESCOM (IPN)

Skills

Programming Languages: Python, R, SQL, C++, SAS , JavaScript, PHP ,HTML5, CSS
Libraries: Numpy, Pandas, Matplotlib, Scikit-learn, ggplot2
Work Flow: Git, GitHub, Google Colab, Jupyter Notebook ,VS Code, Overleaf (LaTeX), Linux, Command Prompt
Languages: Spanish(Native), English(C1)

Professional Certificates

SAS Institute Jun-Jul 2021
▾ *Applied Analytics Using SAS Enterprise Miner* *Virtual*

- Enterprise Guide 1: Querying and Reporting
- SAS Programming for R Users
- SAS Visual Analytics 1 for SAS Viya: Basics
- SAS Visual Statistics on SAS Viya: Interactive Model Building
- Statistics 1: Introduction to ANOVA, Regression and Logistic Regression
- SAS Programming 1: Essentials

SAP Dec 2020
A First Step Towards SAP HANA Query Optimization *Virtual*

Achievements

Scholarship SAS LATAM 2021 Jul 2021
Received free training with live mentoring from SAS experts *Virtual*

Contestant Nov 2020
ACM-ICPC Grand Prize of Mexico 2020 (Top 20%) *Virtual*

Winner, Talent Award of the University Bachelor Jun 2018
Prized in the Scientific Research Category *UNAM, Mexico City*

Gold Medal/First Place '16, '17, '18
7^{th} *Knowledge University Olympiad;* 31^{st} *and* 30^{th} *Mathematical Olympiad of Mexico City* *High School, UNAM*

Second Place (National Level) 2013
XIV Competencia Nacional Cotorra de Matemáticas

PROJECTS

Social Service: Research on Finance Time Series Expected Dec 2021

- Understand the *state of the art* algorithms to **forecast** time series
- Developing a **robust** trading algorithm that generates profit over time
- Compare different techniques in Machine Learning and Pattern Recognition

Stock Market and Sentiment Analysis for Investing Based in Bitcoin Jun 2021

- Comprehend *technical analysis* and *risk* in trading to **predict** price direction.
- Prediction along with indicators from **NLP and Sentiment analysis** from tweets.
- Found that serious news instead of tweets, would be a better indicator to predict direction.

Neo4J: PROFECO Jun 2021

- Develop a **graph** database consistent with business rules
- **Frontend** made with Python with motor search connected to Neo4J
- Design an application that allows certain queries related to products and stores

E-commerce business project using CRISP methodology Jun 2021

- Focused on **data cleaning** and building **forecasting** models of demand of products
- Make **prediction** on the delivery of products in relationship with dimension and price factors.
- Propose techniques to **handle** and **avoid** errors on data.

MongoDB: NYC Bike Ride System May 2021

- Design and develop a **document** database consistent with business rules.
- Load data using **batch method** due to large amount of data.
- **Propose trips** that full fill parameters like time or that the user choose.

Cassandra: Book platform May 2021

- Design and develop a **column-family** database consistent with business rules.
- The books platform let the user **add** information about their favorite books, etc.
- The admin of the app could make queries and basic statistics on it.

Redis: Url shortener Apr 2021

- Design and develop a **key-value** database consistent with business rules.
- System would support **user management** such as create new account, delete, etc..
- User could add urls to wishlist and categorize it within topics.

Optimization Cost-Nutrition in Raw Vegan diet | *Pandas, Numpy* Feb 2021

- Designed a **Mathematical Model** that provides an efficient solution.
- **Knapsack 0/1** was the implemented algorithm with a dynamic programming.
- Given a limited **budget**, provided the list of fruits, vegetables and oilseeds, the output is the best combination possible that **maximizes nutritional content.**

Currency Exchanges (OLAP) | *SQL, PostgreSQL, pgmodeler* Jan 2021

- **Structure and Design** the Data Warehouse consistent with the business rules.
- Work with fine level of granularity (level of detail), uploading $10,000$ records.
- Made **analytical and prediction queries** to understand the business' behavior.

Finite Differences Method | *Numpy, Matplotlib, Seaborn* Jan 2021

The Finite Differences is a numerical method in which we obtain the solution of partial derivatives that gives a understanding about the heat diffusion in a given body.

- Implemented solution using **iterative and direct** methods.
- Give different **visualizations** in $2-D$ and $3-D$ to show results.

Polynomial Approximation and Weather Forecast | *Numpy, Pandas* Nov 2020

- Implemented a efficient solution using **Cholesky Method** to give a polynomial formula of degree 3 that fits the best with the data.
- Proposed a segmentation of $3, 5, 10$ *year period* and with seasons.
- Deal with large data sets and figure out how to load it to work with.