ADEL FABIÁN DEL VALLE PÉREZ

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EDUCATION

University of Puerto Rico, Mayagüez Campus 2017 – 2023
B.S. in Computer Science
Minor in Applied Mathematics
GPA: 3.15 / Grad. GPA: 3.41

HONORS AND AWARDS

Honor Roll 2018 – 2019
University of Puerto Rico, Mayagüez Campus

WORKING PAPERS

Stated Factors for the Choice of Transit during the COVID-19 Pandemic Jan 2022 - Present
University of Puerto Rico, Mayagüez Campus, and University of Texas A&M
Role: Research Assistant, Co-Author
Advisor: Dr. Mark Burris and Dr. Alberto M. Figueroa
- Preprocessed Travel Survey Data designed with Stress and Fear of Covid Instruments.
- Implemented Exploratory Data Analysis, Data Wrangling, Hypothesis testing, etc.
- Trained a Random Forest (RF) with 99.77% accuracy on testing set and 99.72% F1 score.
- Used Additive Feature Attribution techniques as SHAP to measure feature impact, correlation and importance on RF output.
- Wrote Data Preprocessing, Modeling and Results in the paper.
- Submitted to Transportation Research Board and is currently being reviewed.

RESEARCH EXPERIENCE

Predicting Travel in a Post-Pandemic America Jan 2022 - Present
University of Puerto Rico, Mayagüez Campus, and University of Texas A&M
Role: Research Assistant
Advisor: Dr. Alberto M. Figueroa and Dr. Mark Burris
- Researched with the National Institute for Congestion Reduction (NICR) at the University of Puerto Rico at Mayagüez and University of Texas A&M to understand new travel behaviors caused by the COVID-19 pandemic.

- Analyzed Puerto Rico train ridership data from 2019-2022 to analyze entries and exits per station (16 in total), with ~2M rows. Cleaned, Preprocessed, Filtered, Visualized and Data mined the data sets.
- Provided experimental designs and psychometric evaluations focused on understanding how transit has changed, from a behavioral economics perspective.

Analysis in the Study of Emotion and Social Media Consumption in Puerto Rico

Jan - May 2021

University of Puerto Rico, Mayagüez Campus
Role: Primary Researcher
Advisor: Dr. Saylisse Padilla
- Researched at the University of Puerto Rico at Mayagüez to understand the relationship between social media consumption and mental health in the scope of Puerto Rico.
- Extracted +500 random users from Twitter alongside their tweets from January 2020 to April 2021.
- Structured the data and created a pipeline to insert +500 user records with 226k tweets on a JSON attribute.
- Implemented K-Means, Ward and McQuitty models with a desirability function of 16.65, 10.05, and 5.13.

Exploring Machine Learning Algorithms for Malware Detection

Aug - Dec 2021

University of Puerto Rico, Mayagüez Campus
Role: Research Primary Group Manager
Advisor: Dr. Jarilyn Hernandez, Dr. Nayda Santiago
- Researched with MIT Lincoln Laboratory and the University of Puerto Rico at Mayagüez to study the efficiency of Machine Learning algorithms detecting malware in network data sets.
- Conducted a Literature Review on previous research using Machine and Deep Learning Algorithms to identify and classify malware.
- Explored potential malware data sets.

Artificial Neural Networks for Part-of-Speech Tagger

Aug - Dec 2019

University of Puerto Rico, Mayagüez Campus
Role: Research Primary Group Manager
Advisor: Dr. Jose Fernando Vegas Rivero, Dr. Nayda Santiago, and Dr. Hilton Alers
- Researched at the University of Puerto Rico at Mayagüez to design, develop, and implement an Artificial Neural Network for Part-of-Speech Tagging.
- Designed the experiment using the architecture of a Bidirectional Recurrent Neural Network and Long-Short Term Memory Cells.
- Used Brown University Corpus, programmed all the text preprocessing functions, one-hot encoded the labels and created a dictionary as embedding for the vocabulary.
- Achieved 99.87%, 97.24% and 93.54% accuracy on the training, validation and testing sets.

WORK EXPERIENCE

Data Intelligence Advisor at DuartePino   March 2022 - Current
- Established Analytics Department processes. Designed architecture, data flow, data ingestion, etc.
- Implemented the architecture design in Amazon Web Services. Created the VPC, deployed Jupyter on an EC2 instance and created the databases.
- Evaluated different products and met with sales representatives to make business decisions.
- Created the pipeline to preprocess incoming data and stream it through Tableau.

Data Science Intern at Nagnoi   Aug - Nov 2021
- Led data analysis of Opioids crisis in Puerto Rico with the collaboration of the Dpt. of Health.
- Data mined 2+ sets with 5k+ rows to find patterns and extract statistical parameters of deaths by Opioids.
- Mined Dpt. of Education data with 5M+ rows from 2008 to 2021 and analyzed performance of students.

Cloud Engineer Intern at Amazon Web Services   May - Aug 2021
- Learned the specifics about Amazon Web Services Cloud essentials as EC2, VPC, S3, etc.
- Configured Virtual Private Clouds (Subnetting, Route Table, etc) to host an app in multiple area zones.
- Troubleshoot 10+ down applications via the instance terminal through SSH.

Data Engineer Intern at Nagnoi   Jan - May 2021
- Worked in the Government team to work Dpt. of Education and Governor office projects (PRITS).
- Performed EDA on Public Health, Education, Economy, and other government related data sets.
- Created 6+ data pipelines, ingested and transformed data from the DBs to Azure Storage.

Software Engineer Intern at MCS   Aug - Dec 2020
- Accustomed to Medicare policies to implement a Churn Prediction on affiliates with high risk of leaving.
- Engineered data through historial of affiliates to augment churn attributes with SQL in DB2/AS400.
- Preprocessed, cleaned data, and implemented Random Forest and XGBoost with a 90% testing accuracy.

Machine Learning Engineer Intern at Verizon   June - Aug 2020
- Led project to find the customer most common problems when talking with a Live Agent at the VEC.
- Extracted 3M+ rows, applied EDA, pre-processed the text, and engineered the data.
- Designed a Machine Learning pipeline implementing a Word Embedding and Topic Modeling (LDA).

COMMUNITY AND ACADEMIC OUTREACH

Bioinformatics Workshop Lecturer   April 2022
Gave a Bioinformatics workshop at the University of Puerto Rico at Mayagüez for the

Microbiology Department. Prepared a Jupyter Notebook for Cancer Classification with 19 classes and 217 features. Elaborated a Correlation Matrix, Feature Selection, Classifiers as Random Forest and XGBoost and a Confusion Matrix.

Intro. to Machine Learning Workshop Lecturer   Jan 2020

Collaborated with NSF funded projects FIRST-HEP and IRIS-HEP and taught an Introduction to Machine Learning workshop to K-12 Physics High School teachers. Prepared a Jupyter Notebook with a Pollution Data set to teach the basic concepts of Data Wrangling, Data Cleaning and Linear Regression.

Mathematics Tutor   Aug 2019 - May 2020

Tutored freshman and sophomore students in one-to-one sessions to teach them Precalculus I, Precalculus II, Calculus I and Calculus II. Prepared exercises for them to practice and guide them through.

Hacks! UPRM Summer Instructor   June - July 2018

Collaborated with the Computer Science and Engineering department at the University of Puerto Rico at Mayagüez to instruct and mentor High School students programming skills. Led group of students to create their very first application using App Inventor.

Hacks! Kids UPRM Instructor   April 2018

Collaborated with the Computer Science and Engineering department at the University of Puerto Rico at Mayagüez to instruct and mentor 7-10 year old students programming skills. Led group of students to create their very first application using Scratch.

EXTRACURRICULAR ORGANIZATIONS

Association for Computing Machinery (ACM) CSE Chapter   Jan 2019 - Jan 2020

Role: Founder and President
Founded the ACM Computer and Science Engineering Chapter at the University of Puerto Rico at Mayagüez. Created Web Development Bootcamps, made a Partnership with NVIDIA, led the proposal for the Company Night and organized the Communications, Social Media, Events and Treasury subcommittees.

PROFESSIONAL ENRICHMENT

Data Analytics for Science Immersion Experience   Jun 2022
at Carnegie Mellon University

Lectures: Shape Optimization by Dr. Robin Neumayer, Data Randomization by Dr. Hayden Schaeffer, Big Data by Dr. John Urbanic, and Working Molecular Data by Dr. Olexandr Isayev
Selected to participate in a 2-week program hosted by Dow and Microsoft in Carnegie Mellon University. Learned about different fields where Data Science is being implemented and the techniques used in Academia & Industry.

The @Scale Conference 2019   Oct 2019

Invited by Facebook to the @Scale Conference that featured technical deep dives from

engineers at a multitude of scale companies: Amazon Web Services, Box, Confluent, Cloudflare, Facebook, Google, Lyft, and NVIDIA. Learned about the latest advancements in AI, Data Privacy and Security.

CapitalOne Ignite! Development Program   Aug 2019

Selected to participate in skill building workshops of personal branding and technical interviews. Networked with Software Engineers in the industry that facilitated knowledge and insights from their experience.

New Venture Design Experience (NVDE)   Aug - Dec 2018

Worked alongside 2 engineers and 3 business students to implement Design Thinking on a problem. Chose *'How to help women feel safe by walking alone'* as our design challenge. Validated it through 100 iterations and 250 empathy interviews. Brainstormed 100 ideas and built a prototype. Won 2nd place by people choice and 3rd by the judges.

REFERENCES

References are available upon request.