# Fernando **Martinez-Lopez**

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## **Edu**cation

**Fordham University**                                                                                                        *New York, N.Y., U.S.*

MASTER IN DATA SCIENCE - MSc                                                                                        *January 2022 - May 2023*

- **GPA** 4.00/4.00.
- **Relevant Courses:** Cloud Computing, Big Data Computing, Blockchain Technology, Data Mining, Machine Learning, and Deep Learning.

**Quantic School of Business and Technology**                                                                 *Washington, D.C., U.S.*

MASTER OF BUSINESS ADMINISTRATION - MBA                                                                     *March 2021 - March 2022*

- **Grade**: Honors.

**Santo Domingo Institute of Technology (INTEC)**                                                       *Santo Domingo, Dom. Rep.*

B.S. IN BUSINESS ENGINEERING                                                                                          *August 2014 - April 2018*

- **GPA** 3.81/4.00, Summa Cum Laude.
- INTEC Meritorious Scholarship (Awarded for top 1% program).

## **Aca**demic & Research Experience

**Fordham University**                                                                                                        *New York, N.Y., U.S.*

GRADUATE RESEARCH AND TEACHING ASSISTANT                                                                  *May 2022 - PRESENT*

- Y. Zhao, **F. Martinez**, H. Xue, G. M. Weiss, "Admissions in the Age of AI: Detecting AI-Generated Application Materials in Higher Education," - Submitted (November 2023).
- **F. Martinez**, Y. Zhao, "Integrating Multiple Visual Attention Mechanisms in Deep Neural Networks, " COMPSAC 2023.
- **F. Martinez**, M. Rahouti, A. Chehri, R. Amin, N. Ghani, "Rediscovering Fraud Detection in Bitcoin Transactions Using Machine Learning Models, " WF-IoT23.
- E. Thrall, **F. Martinez Lopez**, T. Egg, S. Lee, J. Schrier, Y. Zhao, "Rediscovering The Particle in a Box: Machine learning regression analysis for hypothesis generation in physical chemistry lab," *Journal of Chemical Education*.
- Y. Ding, Q. Wang , **F. Martinez Lopez**, Y. Wu, Y. Zhao, "A Machine Learning Approach to Examine Personality, Adjustment, and Engineering Identity Among College Engineering Students", - Submitted (October 2023).
- **TA Courses:** Algorithms for Data Science, Data Visualization
- **Award:** GSAS Graduate Research Assistantship Award

## **Ind**ustry Experience

**MUFG Americas**                                                                                                              *New York, N.Y., U.S.*

QUANTITATIVE MODELING - AVP                                                                                          *July 2023 - PRESENT*

- Develop, implement, and validate quantitative models for multiple desks, risk management, and other securities-related activities in compliance with CCAR planning.
- Ensure that models assess optimal performance and comply with regulatory requirements and internal policies.

**Smart Energy**                                                                                                                *New York, N.Y., U.S.*

DATA SCIENTIST                                                                                                               *September 2021 - July 2023*

- Develop end-to-end Machine Learning models to generate actionable business insights. These models drive marketing campaigns of 10,000+ Warm Leads daily, support customer retention strategies, and multiple operation processes.
- Query and perform hands-on data analyses, A/B experiments, and modeling over enormous datasets towards developing insights, recommendations, and presenting results to various stakeholders.

**General Directorate of Internal Taxes**                                                                         *Santo Domingo, Dom. Rep.*

DATA SCIENTIST - RESEARCH AND ANALYTICS OFFICE                                                            *April 2020 - September 2021*

- Create, validate, test, and tune Machine Learning algorithms to detect tax noncompliance, manage risk behavior profiles, reduce tax gaps, and build advanced analytics engines.
- Take defined business objectives and produce analytics to provide stakeholders with data-driven insights that lead to improved tax auditing (the action through which the Tax Administrations seek to prevent taxpayers from incurring tax evasion or fraud).
- Present data results and recommendations to leaders.

**General Directorate of Internal Taxes**                                                                         *Santo Domingo, Dom. Rep.*

DATA ANALYST - REGISTRY OFFICE                                                                                    *September 2018 - April 2020*

- Implemented Digital Forms of the National Taxpayer Registry.
- Designed and developed the new engine of automated tax assignation model for the Taxpayers' Registry based on the economic activities and the behavior of the taxpayers.
- Gained knowledge and Hands-on experience in Python and usage of machine learning algorithms.

**INABIMA**  *Santo Domingo, Dom. Rep.*
Project Analyst  *August 2017 - September 2018*

- Establishment of a Risk-based Project Management System.
- Social Impact evaluated by Statistic indicators implementation.

## Research Collaborations and Ongoing Projects

- Developing an Adaptive Multi-Modality Deep Learning Framework, targeting the identification of Zero-day DoS attacks by recognizing anomalies outside established patterns.
- Joint collaboration with the Fordham EDM lab to research methods to detect AI revised and mixed human/AI academic materials, enhancing the use of generative models for academic integrity.
- Joint collaboration with Harvard Medical School and the Massachusets General Hospital exploring the use of ML methods to evaluate risks of Hydroxychloroquine Retinopathy after initializing HCQ medication.

## Honors & Awards

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|---|---|---|
| 2022 | **GSAS Graduate Research Assistantship Award**, GSAS, Fordham University | *New York, U.S.* |
| 2021 | **Honors**, Quantic School of Business and Technology | *Washington, D.C., U.S.* |
| 2021 | **Full International Scholarship (Fordham University)**, Ministry of Higher Education, Science, and Technology | *Santo Domingo, Dom. Rep.* |
| 2021 | **Full Scholarship**, Quantic School of Business and Technology | *Washington, D.C., U.S.* |
| 2018 | **Summa Cum Laude**, Santo Domingo Institute of Technology | *Santo Domingo, Dom. Rep.* |
| 2014 | **Meritorious Scholarship (Awarded for top 1% program)**, Santo Domingo Institute of Technology | *Santo Domingo, Dom. Rep.* |

## Skills

| | |
|---|---|
| **Programming Languages** | Python, R, SQL, Bash, C++. |
| **Data Science, Big Data & Machine Learning** | Hadoop MapReduce, PySpark, PyTorch, TensorFlow, Keras, FB Prophet, OpenCV, Python (eg. scikit-learn, XGBoost, pandas, matplotlib, seaborn, plotly). |
| **BI & Miscellaneous Technologies** | Power BI, Tableau, ETL, Data science pipeline (cleaning, wrangling, feature engineering, visualization, modeling, interpretation), Google Cloud Platform (GCP), Microsoft Azure, APIs, Docker, BeautifulSoup, Excel, Git. |
| **Languages** | English, Spanish, Italian |

## Program Committees & Volunteering

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|---|---|---|
| 2019-2022 | **Program Advisor**, Program Advisory Committee of Business Engineering | *Dominican Republic* |
| 2017-2018 | **Volunteer**, TECHO | *Dominican Republic* |

## Personal Computing Projects

### Academic Application Document Classifier

2023

- Built web application for the paper "Admissions in the Age of AI: Detecting AI-Generated Application Materials in Higher Education"
- Trained using propietary datasets, and wiki dataset, classifying texts as AI-generated or Human-made.
- **Link:** https://huggingface.co/spaces/ferdmartin/GradApplicationDocsApp

### Dog Breed Predictor Web Application

2022

- Built web application for the paper "Integrating Multiple Visual Attention Mechanisms in Deep Neural Networks"
- Trained using multiple datasets, predicting up to 130 classes (dog breeds).
- **Link:** https://huggingface.co/spaces/ferdmartin/DogBreedsApp

### Fifa Scouting Future Soccer Stars - Machine Learning

2020

- Created a model to find future soccer stars on Fifa (Soccer video game), analyzing historical information and their evolution through time.
- Developed a web scrapper to extract young players' historical characteristics (skill ratings) and specialties.

### Netflix Prize Competition - Participation

2019

- Participated in the Netflix Prize Competition hosted on Kaggle to predict user ratings for films towards improving their recommendation algorithm.