

Oscar Alejandro Gomez Quintero

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EDUCATION

- New York University Abu Dhabi** **Aug 2016 - May 2020**
 - B.S. Mathematics, Computer Science (Cum Laude) - GPA: 3.89/4.00 *Abu Dhabi, UAE*
 - Relevant Coursework:** *Machine Learning, Algorithmic Foundations of Data Science, Artificial Intelligence, Database Systems, Visual Analytics, Advanced Probability, Mathematical Statistics, Privacy and Fairness in Data Science*

SKILLS

- Python** (Pandas, Scikit-learn, Pytorch, Keras, Scipy, Numpy, D3.js, Matplotlib, Seaborn, Plotly, Bokeh, Flask), SQL, R (Shiny), JavaScript, C, C++, Java, Mathematica, Spark, Git, Bash, Linux, \LaTeX

WORK EXPERIENCE

- Research Assistant** **Aug 2021 - Present**
 - Duke University - Computer Science* *Durham, NC, USA*
 - Researching explanation methods for data-driven systems using causal inference. Implemented an interface for data analysts to perform What-If and How-To analysis in relational data.
 - Teaching Assistant for the course *Mathematical Foundations of Computer Science*. Completed graduate coursework in Artificial Intelligence, Database Systems, and Privacy and Fairness in Data Science.
- Data Science Researcher** **Aug 2020 - June 2021**
 - Quantil S.A.S.* *Bogota, Colombia*
 - Developed an end-to-end machine learning solution to predict credit risk for a company focused on the distribution of cycling products, successfully detecting more than 90% of the largest delayed payments and overall ROC-AUC of .79.
 - Analyzed the dynamic spatio-temporal behavior of homicide data in Bogota using Zero-Inflated Embedding models [3].
 - Studied the effect of compliance with quarantines and lockdowns on domestic violence during the Covid-19 pandemic in Bogota using mobility data and Generalized Additive Models (GAMs).
 - Developed interpretation methods for Conditional Generative Adversarial Networks (cGAN) to predict robberies using SHAP values. Implemented the recalibration of the network for fairness across socio-economic backgrounds [2].
- Data Science Intern** **June 2019 - Aug 2019**
 - Nexquare* *Dubai, UAE*
 - Enhanced machine learning models, used to predict student performance and employability, by developing and incorporating an interpretability and visualization module within the analytics platform.
 - Integrated the Python and R back-end for the platform, allowing seamless use of models developed in both languages.
- Machine Learning Visualization Intern** **June 2018 - Aug 2018**
 - Visualization and Data Analytics Lab at NYU Tandon School of Engineering* *New York City, NY, USA*
 - Trained SVMs, Random Forests, and Neural Networks to predict customer credit risk from a FICO home credit dataset.
 - Developed visual and interactive explanations for the models based on feature importance and counterfactuals, at individual and global levels. Our **solution** earned 2nd place in the **FICO Explainable ML Challenge**. [1,4,5].
- Machine Learning Research Assistant** **Feb 2017 - May 2018**
 - Music and Sound Cultures Group at NYU Abu Dhabi* *Abu Dhabi, UAE*
 - Led the analysis for the NYUAD library collection of more than 10,000 Arab and African records, using computational audio analysis, machine learning, and visualization techniques.
 - Developed an interactive webapp to explore musical similarity using k-means clustering, deep autoencoders, and t-SNE.

PROJECTS AND PUBLICATIONS

- AdViCE: Aggregated Visual Counterfactual Explanations for Machine Learning Model Validation.** **Oscar Gomez**, Steffen Holter, Jun Yuan and Enrico Bertini. IEEE Visualization Conference (VIS 2021).
- Interpreting a Conditional Generative Adversarial Network Model for Crime Prediction.** Mateo Dulce, **Oscar Gomez**, Juan Moreno, Christian Urcuqui Alvaro Riascos. Iberoamerican Congress on Pattern Recognition (CIARP 2021).
- Zero-Inflated Embeddings to Analyze Homicide Occurrence Patterns.** Hamadys Benavides, **Oscar Gomez**, Mateo Dulce, Paula Rodriguez, Alvaro Riascos. International Conference on Computing and Data Science (CDS 2021).
- ViCE: Visual Counterfactual Explanations for Machine Learning Models.** **Oscar Gomez**, Steffen Holter, Jun Yuan and Enrico Bertini. ACM Conference on Intelligent User Interfaces (IUI 2020).
- FICO Explainable Machine Learning Challenge:** Webapp with global and local explanations for machine learning models predicting customer credit risk. Tech: Python, JavaScript, D3.js, Flask, scikit-learn.

HONORS AND AWARDS

- Full Scholarship:** New York University Abu Dhabi 2016 - 2020
- 2nd Place Winner:** NYUAD International Hackathon Apr 2020
- 2nd Place Winner:** FICO Explainable Machine Learning Challenge Jan 2019
- Best Admission Score (Nationally):** Universidad Nacional de Colombia Apr 2016
- Honorable Mention/Bronze/Silver:** International/Iberoamerican/Centroamerican Math Olympiads 2014 - 2016