

# GABRIEL PATRÓN

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## EDUCATION

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**University of Michigan, Ann Arbor**

*August 2022 - Present (Expected May 2027)*

Ph.D. Student in Statistics

Advisor: Jeffrey Regier

**Selected Graduate-Level Coursework:** Regression Analysis, Complex Systems (Adaptive Systems), Statistical Learning, Probability Theory (Measure-theoretic), Monte Carlo Methods, Applied Probability and Stochastic Modeling, Graphics and Generative Models.

**Universidad Nacional de Colombia, Bogotá**

*July 2016 - April 2021*

B.Sc. Statistics - With honors

4.6 on 5.0 scale

## PUBLICATIONS

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**Recommendations Beyond Catalogs: Diffusion Models for Personalized Recommendation.**

Gabriel Patron, Zhiwei Xu, Ishan Kapnadak, Felipe Maia Polo. Preprint February 2025. [Link]

**An Interpretable Automated Machine Learning Credit Risk Model.** Patron, G., Leon D., Lopez E., Hernandez G. In: Figueroa-García J.C., Garay-Rairán F.S., Hernández-Pérez G.J., Díaz-Gutierrez Y. (eds) Applied Computer Sciences in Engineering. WEA 2020. Communications in Computer and Information Science, vol 1274. Springer, Cham. 2020 [https://doi.org/10.1007/978-3-030-61834-6\\_2](https://doi.org/10.1007/978-3-030-61834-6_2). [Link]

## WORK HISTORY

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**Director AI-VFX**

Bogotá, Colombia

*Reflejos*

*Jul 2021 - Aug 2022*

- Led the AI-driven VFX for *Reflejos*, the first AI-powered feature film in Latin America.
- Developed generative model demos for synthetic imagery and video, securing investor funding.
- Assembled and managed a pioneering Machine Learning team, recruiting engineers with both technical expertise and artistic sensibility.
- Overcame industry challenges in AI-driven media production, demonstrating the transformative potential of diffusion models in filmmaking.

**AI Specialist for Media**

Bogotá, Colombia

*Dirty Kitchen*

Feb 2021 - August 2022

- Develop image and video capabilities for the first AI virtual influencer (@melodijoflora) using Diffusion models and DeepFakes, reaching more than 100K exposures in social media and brand partnerships.
- Implement computer vision techniques to automate various parts of the audiovisual media production and postproduction pipeline.

**Machine Learning Engineer**

Bogotá, Colombia

*ADAO*

April 2019 - Feb 2021

- Develop compliance code for minimum risk capital calculation (SIMM by ISDA [Link] & FRTB by Basel Committee [Link]).
- Research **NLP** techniques for text mining in large financial text databases (> 100GB).
- Build and maintain code documentation and interfaces.
- Design benchmarks and testing frameworks for code performance.

## SOFTWARE

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**Markovian Music Composer:** Using Markov Chains, built an automatic music composer that integrated various instruments. [Link].

**Ancient Greek Text Summarizer:** An implementation of TextRank probabilistic summarization algorithm built for the ancient greek language in an era before LLMs. [Link].

## TEACHING EXPERIENCE

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**University of Michigan, Ann Arbor**

*August 2022 - Present*

*Graduate Student Instructor*

*Ann Arbor, MI*

Responsibilities: Led lab sessions, graded assignments, and assisted students in coursework.

**Winter 2025**

*DATASCI 306 (Majors):* Introduction to Statistics and Data Analysis

**Fall 2024**

*DATASCI 101 (Intro):* Introductory Data Science

**Winter 2024**

*STATS 503 (Graduate):* Statistical Learning II: Multivariate Analysis

**Fall 2023**

*STATS 415 (Majors):* Data Mining and Statistical Learning

**Winter 2023**

*STATS 413 (Majors):* Applied Regression Analysis

**Fall 2022**

*STATS 250 (Intro):* Introduction to Statistics and Data Analysis

## TALKS & SEMINARS

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**Generative Adversarial Networks for Simulation of Climate Processes**

*April 2022*

*Columbia University's IRI Institute*

*New York, NY*

- Generative Adversarial Networks can provide efficient sampling mechanisms for simulations of weather systems.
- [Video Link].

**Principled Training of Generative Adversarial Networks via Wasserstein Distance and Gradient Penalty**

*August 2022*

*Quantil*

*Bogotá, Colombia*

- Seminar talk on Undergraduate Thesis work at Quantil, one of the top applied mathematics and AI firms in Colombia.
- [Video Link].

**XXVIII International Statistics Symposium**

*July 2018*

*Universidad del Atlántico*

*Barranquilla, Colombia*

- Presented "Stochastic Symphonies" project as a poster in a music application.
- Won "Best Poster" award at the Statistics Symposium.
- [Project Link].

**5th International and Interdisciplinary Workshop on Mathematical Modeling of Environment and Evolution on Social and Life Processes**

*July 2018*

- Presented an application of a Hawkes self-exciting process for modeling viral infection diffusion.

## PRIZES AND RECOGNITIONS

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### Degree with Honors in Statistics

2020

*Universidad Nacional de Colombia*

*Bogotá, Colombia*

- Awarded to the best GPA within the graduating class.

### Best Undergraduate Thesis in Statistics

2020

*Universidad Nacional de Colombia*

*Bogotá, Colombia*

- Awarded for *Principled Training of Generative Adversarial Networks via Wasserstein Distance and Gradient Penalty*.
- Selected as the best among 67 eligible theses in the graduating class.

### Prize for Honorary Academic Merit

2017

*Universidad Nacional de Colombia*

*Bogotá, Colombia*

- Full scholarship awarded to the best weighted GPA in the Statistics Department (600 students at the time).

### Tuition Exemptions for Academic Merit

2017 – 2020

*Universidad Nacional de Colombia*

*Bogotá, Colombia*

- Fee exemptions awarded for outstanding academic performance.

### First Prize: Banistmo Regional (LATAM) Hackathon

2019

*Banistmo*

*Latin America*

- Winner team among 56 teams from LATAM.
- Developed an innovative digital solution for Credit Risk Model generation.
- Live competition over 3 days, awarded a USD 5,000 cash prize.
- [Official Hackathon Page].

### First Prize: Best Poster, International Statistics Symposium XXVIII

2018

*Universidad del Atlántico*

*Barranquilla, Colombia*

- Awarded for a personal project: Automatic music generation via Markov Chains.
- Developed in Python and presented as an interactive demonstration.
- [Project Repository].

## SERVICE

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### Conference Reviews

- Reviewer for *ICML*.

### Graduate Mentor

*January 2024 - May 2024*

*Undergraduate Research Program in Statistics, University of Michigan*

*Ann Arbor, MI*

- Guided promising undergraduates on a research problem based on Galaxy Cluster detection.

## PROFESSIONAL CERTIFICATES

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### Statistics and Data Science MicroMasters

2023

*Massachusetts Institute of Technology (MIT)*

*edX*

- Successfully completed MIT's MicroMasters program in Statistics and Data Science.

MicroMasters Program in Finance

Massachusetts Institute of Technology (MIT)

2023

edX

- Completed graduate-level coursework in Finance through MIT’s MicroMasters program.

Generative Adversarial Networks Specialization

DeepLearning.AI

2022

Coursera

- Gained expertise in training and optimizing GANs for generative modeling.

Algorithms Specialization

Stanford University

2022

Coursera

- Studied fundamental algorithms, data structures, and complexity analysis.

Natural Language Processing Specialization

DeepLearning.AI

2021

Coursera

- Learned advanced NLP techniques, including transformers and sequence models.

TensorFlow: Advanced Techniques Specialization

DeepLearning.AI

2021

Coursera

- Mastered TensorFlow for deep learning applications and model optimization.

Django Specialization

University of Michigan

2020

Coursera

- Built web applications using Django, including REST APIs and authentication systems.

SKILLS

Programming Skills	Python, Django, Scikit-learn, Tensorflow, Pytorch, Git, Shell, Docker
Foreign Languages	English (Advanced), French (Advanced), Chinese (Intermediate)
Native Language	Spanish