# Carlos Pinzón
*Mathematician and engineer*

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Origin: Bogotá, Colombia

Residence: Strasbourg ↔ Paris

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## EDUCATION

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| July 2020 - Today | | **PhD: Fairness and privacy issues in machine learning**<br>École Polytechnique, Inria. (Palaiseau, France) |
| Jan. 2018 - Sep. 2020 | | **Master in engineering (computer science):** 4 semesters.<br>Highest grade, honors and graduation speech.<br>Pontificia Universidad Javeriana Cali (PUJ Cali). |
| Aug. 2011 - Dec. 2017 | | **Bachelor in Mathematics**: 9 semesters.<br>Highest grade, honors, graduation speech and award.<br>Escuela Colombiana de Ingeniería (ECI). |
| Jan. 2011 - July 2017 | | **Bachelor in electronics engineering**: 10 semesters.<br>Highest grade and award.<br>Escuela Colombiana de Ingeniería (ECI). |
| Aug. 2016 - July 2017 | | **DAAD scholarship**: academic semester and internship semester.<br>▪ Winter semester 2016 / 2017 at KIT, Karlsruhe, Germany.<br>▪ Internship as market analyst at ICIS, Karlsruhe. |

## LANGUAGES

**Spanish**: Mother tongue.

**English**[1]: Fluid, C1.

**French**: Good and improving. Around B2~C1 these days.

**German**[2][3]: Was B2~C1 back in 2017. I'm forgetting it slowly.

## WORK EXPERIENCE

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| Sep. 2020 - Feb. 2022 | **Assistant** for programming course CSE 101. École Polytechnique. |
| Jan. 2018 - May 2020 | **Data analyst and software developer**: Dashboard and backend algorithms.<br>Centro de excelencia CAOBA (big data center). |
| Nov. 2018 - Aug. 2019 | **App developer using Ionic**: Entrepreneurship *Uigo* with three colleagues. |
| Aug. 2018 - Dec. 2019 | **Professor assistant of trees and graphs** with Camilo Rocha. PUJ, Cali. |
| Jan. 2018 - May 2018 | **Bsc. Professor of linear algebra and algorithms**: 3 groups, 3 subjects.<br>ALLI (algebra), PIMO (programming II) y ALGO (algorithms). ECI, Bogotá. |
| Jan. 2017 - June 2017 | **Market analyst (intern)**: Forecasting of LNG flow in the UK and electricity prices<br>in Germany using MLearning. ICIS Tschach Solutions, Karlsruhe. |
| Jan. 2014 - May 2015 | **Assistant** for linear algebra course. Prof. Guiomar Lleras. ECI, Bogotá. |

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[1] Sep. 2020, C1 IELTS.
[2] Feb. 2016, B1 Goethe Zertifikat: 80 Sprechen, 96 Schreiben, 77 Hören, 80 Lessen.
[3] June 2017, C1 TestDaF: 5/5 Hören, 4/5 Sprechen, 4/5 Schreiben, 4/5 Lessen.

## RESEARCH AND ACADEMIC PROJECTS

- **Frequency estimation of evolving data under local differential privacy**.
  Algorithm for sequential private (noisy) data collection. Conference EDBT 2023.
- **Causal discovery for fairness.**
  Sensitivity analysis of the causality framework for assessing fairness. NIPS 2022.
- **Fast Python sampler of the von Mises Fisher distribution** (numpy sampler)
- **Minimizing information leakage under padding constraints** (privacy, awaiting response)
- **On the impossibility of non-trivial accuracy in presence of fairness constraints**
  Cases where the accuracy-fairness trade-off is extreme. AAAI 2022, PFIA 2022.
- **Computing aggregate knowledge as the greatest lower bound of knowledge.**
  Conference RAMICS 2021. (posets, discrete math)
- **Make puzzles great again.** 4 problems and interesting solutions. LNCS.
- **Algorithmic analysis of blockchain efficiency with communication delay**.
  Model for blockchain growth using graph theory. Conference FASE 2020.
- **Segmentation of crop images,** with Dr. Javier Chaparro
  Project about path routing from aerial photos of potato crops for a land robot.
- **Cardiac data filtering**, with my friend Omar Parra and 3 professors
  Project about a GUI in Matlab for processing images and data of hearts of lab rats.
- **Espacios ad-compactos**, supervised by Dr. Néstor Raúl Pachón Rubiano
  Study of a generalization of compactness in topology (pure math).
- **Double-spend attack models with time advantage for Bitcoin**
  Theoretical model for some attacks to the Bitcoin network. CLEI 2016. ENTCS.

## PERSONAL SKILLS

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| Communication and personality | - I feel comfortable giving a talk or being the center of attention.<br>- I listen carefully to other people's point of view.<br>- I am transparent and I avoid conflicts.<br>- I excel at making hard topics easier to understand for my colleagues.<br>- I like teamworking. "Alone means faster but together means further".<br>- I write clearly and I put effort into pronunciation to be understood easily. |
| Preferred topics | - Mathematics: logic and probability/statistics.<br>- Computer science: ML, divide and conquer algorithms. |
| Technical skills | - Lots of experience with Python and javascript. I understand Python deeply.<br>- Preferred science tools: numpy, scikit-learn, pytorch, vsCode, sublime, colab.<br>- Some, but little experience with C, C++ and Java in programming contests.<br>- Front-end programming skills. Vanilla JS+CSS+HTML, jQuery, angular, react, TS.<br>- Server-side preferred tools: Linux (since 2009), git, node, flask, sqlite, NGINX. |

## CERTIFICATES, AWARDS AND MORE

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| Online courses (mostly coursera) | - **6th IVADO/Mila deep learning school**. Université de Montréal.<br>- **Economics of money and banking**. Columbia University.<br>- **Artificial intelligence data fairness and bias**, LearnQuest.<br>- **Internet giants: law and economics of media platforms**. U. of Michigan.<br>- **Machine learning**. Stanford University. Perfect score, 100%.<br>- **Digital signal processing**. École Polytechnique Fédérale de Lausanne. |
| Awards | - **Datatón Bancolombia 2019**. Third place (national), with two friends.<br>- **Two 100% Master-PhD scholarships**. To be used exclusively at ECI for obtaining the highest grades in electronics and then in mathematics.<br>- **Academic excellence scholarship** more than 8 times consecutively at ECI for being among the top 3 students in electronics and mathematics.<br>- **Programming contests CCPL** with two friends. Team Ecigma Alpha.<br>  ▫ Third best team in Colombia during 2014 (bronze medal).<br>  ▫ First place in some contests during 2015 and 2016.<br>  ▫ Special invitation to visit Google and Microsoft offices in Bogotá. |

Paris, May 2023

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