

# Camilo Carvajal Reyes

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*I am a Mathematical Engineering/MSc in Data Science Student at Universidad de Chile, double degree with CentraleSupélec. My research interests are generative models, mathematical modelling of language and stochastic algorithms in data science, with a special emphasis in ethical aspects.*

## Personal Details

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## Education

- 2023 **Universidad de Chile, FCFM, MSc in Data Science**,  
Thesis: Safe sampling from generative models, supervised by Felipe Tobar.  
Exploring modifications to the sampling process of score-based models for ethical generation.
- 2016-2022 **Universidad de Chile, FCFM, Mathematical Engineering Degree\***.  
Bachelor of Science in Engineering Mathematics (2022)
- 2018-2020 **CentraleSupélec, Université Paris Saclay, General Engineering\***, Research Track.  
\*Double Degree Programme

## Research and Experience

- 2023 **Cofunder and External Relations Coordinator, AEDIA**,  
Association for Ethics in Data Science and Artificial Intelligence.  
Establishing links with relevant institutions and events organisation.
- 2023 **Organisation support EVIC 2023, Data and Artificial Intelligence Initiative (IDIA)**,  
Assistance for Latin-American Summer School in Computational Intelligence..
- Spring 2022 **Developing models on Azure with MLOps methodology, UFRO-ESO**,  
Supervised by Andrés Ávila y Juan Pablo Gil.  
Exploring deployment strategies of ML models - Collaboration between Universidad de la Frontera y European Southern Observatory, CORFO Project 14ENI2-26866.
- Fall 2022 **Production of teaching material for Stochastic Simulation, DIM U. de Chile**,  
Supervised by Joaquin Fontbona.  
Elaboration of a course book and edition of practical laboratories.
- Summer 2022 **NLP Intern at European Southern Observatory, Paranal Observatory**,  
Supervised by Juan Pablo Gil - Software team.  
Natural Language Processing for problem troubleshooting using software logs.
- Spring 2020 **Research Intern at FAST Team, CentraleSupélec - Campus de Rennes, France**, Supervised  
by Renaud Séguier and Simon Leglaive.  
Assessing contextualized word embeddings and language modelling through probability distributions on a semantic latent space.

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## Projects

- 2023 **Natural language processing of *EthicApp* text data**, *Ethics Unit, FCFM*,  
Using language models for assessing ethics competence of engineering students.  
Collaboration with Ethics Unit, Humanities Department, FCFM UChile.
- Spring 2022 **Named entity recognition in medical prescriptions**, *MDS-Minsal*,  
Model development for use in prescription error detection, MDS7201 Data Science Project.
- Fall 2022 **Deep versus interpretable models for emoji detection in Tweets**,  
*Semester Project CC5205 Data Mining (best mark)*.
- Spring 2021 **An adjacency notion for solving the Steiner Tree problem with Simulated Annealing**,  
*Final Project MA4402 Stochastic Simulation*.
- 2018-2020 **Parcours Recherche at CentraleSupélec**, *Track for Research Specialization*, .  
Exploring language representation learning for emotions recognition  
Science Communication training (with L'école de la Mediation)

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## Teaching and Talks

- Spring 2023 **Universidad de Chile**, *Generative Models*,  
Teaching Assistant - Syllabus design, Upcoming new course - MSc in Data Science.
- Fall 2023 **Universidad de Chile**, *MDS7104 Machine Learning*,  
Teaching Assistant.  
Tutorial: Lineal regression, maximum likelihood estimator and Bayesian lineal regression  
Lecture: Logistic regression  
Lectures: Trees, Random Forests, Bagging and Boosting  
Tutorial: Transformer-based language models
- Fall 2023 **Universidad de Chile**, *MDS7201 Data Science Project*,  
Project Assistant (Assisting Data Science projects with companies).  
Wird: Natural language processing for unsupervised email classification  
Triple P: Causality for evidence-based positive parenting programs  
ESO: Anomally detection in Very Large Telescope Interferometer vibrations
- Spring 2022 **Universidad de Chile**, *MA4402 Stochastic Simulation: Theory and Laboratory*,  
Teaching Assistant.  
Tutorial: Monte Carlo methods for sampling  
Tutorial: Stochastic gradient descent (SGD) and backpropagation  
Lecture: SGD variants, universal approximation theorem and neural networks basics
- 2021 **Guest Lecture and Tutorial at CentraleSupélec**, *Natural Language Processing*, On  
*Digital at the service of human factor* Challenge, Campus de Rennes.
- February 2022 **Talk at ESO AI Forum**, *Natural Language Processing*,  
Artificial Intelligence internal group at European Southern Observatory.
- March 2021 **Lecture and Tutorial at CentraleSupélec**, *Natural Language Processing*, AT *Digital at the service of human factor* challenge, Rennes Campus.
- 2019 **Talk at Palais de la Découverte, Paris** , *Artificial Intelligence and Emotions* , On  
*Sciences Participatives: 1 chercheur · e, 1 manip*.
- 2018 **Universidad de Chile**, *Introduction to Algebra*, Grading Assistant.  
Teaching Assistant Training
- Summer 2018, 2023 **Summer School - Universidad de Chile**, *Teaching Assistant*,  
Foundations of Abstract Algebra (2018), Cartesian Mathematics (2023).

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## Personal Skills

Programming **Python.**

Libraries: pytorch, transformers, numpy, pandas, scikit-learn, matplotlib  
Fundamentals of Accelerated Computing with CUDA Python certification

**LaTeX, Matlab, Git, Julia, R, Rust, SQL, MongoDB.**

Languages **Spanish**, *First Language.*

**English**, *Full professional proficiency, C1 - IELTS 7.5 score (2019).*

**French**, *Full professional proficiency, C1 - CentraleSupélec internal examination.*

**Portuguese**, *Independent User.*

**German**, *Beginner.*

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## Awards and Scholarships

2018–2020 **CentraleSupélec Foundation Scholarship**

2016 **Outstanding Student - FCFM Universidad de Chile**

2014 ***Penguins without borders* Scholarship for exchange program in New Zealand**

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## Extra-Curricular

Musical **Conducting at CentOr**, 2019.

Activities CentraleSupélec Orchestra

**Beauchef Orchestra Co-founder**, 2017.

Students Symphony Orchestra from U. de Chile Engineering Faculty

**Trumpet Playing**, 2008–.

Plateau de Saclay Symphony Orchestra, Universities of Rennes Symphony Orchestra,  
Santiago's Fire Brigade Band, U. de Chile Big Band, North Shore Brass Band

**FOJI Foundation Scholarship**, 2015.

Metropolitan Students Symphony Orchestra

Writing **Creative Writing**, 2014, Michael King Writers Centre, Auckland.

A New Sense of Belonging Workshop

**Gabriela Mistral Award**, 2013.

Inter-school Story Contest Universidad Andrés Bello

International **Staff at BDI-CentraleSupélec**, 2019.

Culture International Students Organization

**Language Partner - Stanford University**, 2016-2017.

Bing Overseas Studies Program in Santiago

**Beauchef International Community**, 2016-2022.

Welcoming Incoming International Students