Alejandro D. de la Concha Duarte
PhD. in Statistics (Candidate)

🏠 Dual citizen of Mexico and France
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RESEARCH INTERESTS

Machine learning, deep learning, risk management, graph-signal processing, non-parametric statistics

EDUCATION

● OCT 2019 – PRESENT **PhD in Applied Mathematics**
Centre Borelli (ex CMLA), École Normale Supérieure Paris-Saclay, Gif-sur-Yvette, France
NAME OF THE THESIS: GRAPH-BASED MACHINE LEARNING FOR DETECTION TASKS ON COMPLEX SYSTEMS

● SEP 2018 – SEP 2019 **Msc Applied Mathematics (M2 Mathématiques, Vission et Apprentissage)**
École Normale Supérieure Paris-Saclay, Cachan, France
GPA: 17/20.
FOCUS: CONVEX OPTIMIZATION, KERNEL METHODS, DEEP LEARNING, NLP AND GRAPHS APPLIED TO MACHINE LEARNING

● AUG 2017 – AUG 2018 **Msc Mathematics and Iteractions (M1)**
Université d'Evry Val d'Essone, Evry France
GPA: 17/20. CLASS RANK: 1
FOCUS: STATISTICS, FINANCE, OPTIMIZATION

● AUG 2011 – AUG 2015 **Bachelor's degree in Actuarial Science**
Universidad Nacional Autónoma de México, UNAM ,Ciudad de México, México
GPA: 9.97/10. CLASS RANK: 1
FOCUS: PROBABILITY, STATISTICS, FINANCE, RISK MANAGEMENT, PROGRAMMING

● SEP 2014 – JAN 2015 **International student**
Université de Rouen, Rouen, France
GPA 17/20 CLASS RANK: 1
FOCUS: GROUP THEORY, TOPOLOGY, MEASURE THEORY
Third year Bachelor degree in Mathematics

HONORS

Awards

● 2017 **Gabino Barreda Medal** Medal awarded to the student with the highest grades at her Bachelor's program. Universidad Nacional Autónoma de México, UNAM

● 2014 **Second place winner at the National Contests for young statisticians (Bachelor's category)** Work title: *Statistical Analysis of Avid Readers at Universidad Veracruzana*

Scholarships

● 2019-2022 **Région Ile-de-France, DIM Math'Innov**, PhD funding

● 2017-2019 **Fondation Mathématiques Jacques Hadamard**, master scholarship for international students at Paris-Saclay

● 2012-2015 **Fundación Telmex**, bachelor scholarship for the best mexican students

● 2014 **Mitacs Globalink program**, Scholarship for International Academic Exchange at the University of Toronto

TEACHING EXPERIENCE

As teaching assistant:
UNAM, Ciudad de México, México
2017- Design of surveys applied to Social Science and Structural Equation Modelling
2016 - Statistical Learning
Anahuac, Ciudad de México, México
2016-Advanced Statistics

PROFESSIONAL EXPERIENCE

● **Research Data Scientist** FEB 2020–FEB 2022 (PT)
Financial Network Analytics (FNA). London, UK.
Tasks: Research activities in machine learning applied to financial network analysis and NLP

● **Master's Intership** INTERSHIP, APR 2019–SEP 2019 (FT)
CMLA, École Normale Supérieure Paris-Saclay, Cachan, France
Project: *Segmentation of multivariate signals observed over graphs*

● **Data Scientist** INTERSHIP, APR 2018–JUNE 2018 (FT)
Financial Network Analytics (FNA). London, UK.
Project: *Tools from Network Theory applied to Systemic Risk*

● **Risk Analyst** APR 2016 – SEP 2017 (FT)
Central Bank of México (BANXICO). Risk Management Directorate, Mexico City, Mexico.
Tasks: Financial risk management for Mexico's international reserve portfolio. Research activities in systemic risk applied to the Mexican Banking System

● **Bachelor's Internship** OCT 2015 – MAR 2016 (FT)
Central Bank of México (BANXICO). Risk Management Directorate, Mexico City, Mexico.
Tasks: Implementation of numerical techniques for estimating the maximum limitation of liability of insurance contracts subscribed by BANXICO

● **Research Assistant** INTERNSHIP, JUN 2015–SEP 2015 (FT)
University of Toronto, Canada
Project: *Insurance Loss modelling with Erlang-Based Mixture Models*

PUBLICATIONS

● **de la Concha Duarte Alejandro**, Vayatis Nicolas, Kalogeratos Argyris *Collaborative likelihood-ratio estimation over graphs*, arXiv preprint arXiv:2205.14461, 2024 (Under review in Journal of Machine Learning Research)

● **de la Concha Duarte Alejandro**, Vayatis Nicolas, Kalogeratos Argyris *Collaborative non-parametric two-sample testing* Proceedings of The 27th International Conference on Artificial Intelligence and Statistics 2025. (to appear)

● **de la Concha Duarte Alejandro**, Vayatis Nicolas, Kalogeratos Argyris *Online non-parametric likelihood-ratio estimation by Pearson-divergence functional minimization.* Proceedings of The 27th International Conference on Artificial Intelligence and Statistics, PMLR 238:1189-1197 2024.

● **de la Concha Duarte Alejandro**, Vayatis Nicolas, Kalogeratos Argyris *Offline detection of change-points in the mean for stationary graph signals.* Proceedings of The 24th International Conference on Artificial Intelligence and Statistics, PMLR 130:3430-3438, 2021.

● **de la Concha Duarte Alejandro**, *Modelo de Ecuaciones Estructurales vía Mínimos Cuadrados Parciales con R y SMART PLUS.* en "Modelos de Ecuaciones para la Investigación Social". Vargas D. (Coordinador) on Programa Universitario de Estudios del Desarrollo. 2018.

● **de la Concha Alejandro**, Martinez-Jaramillo Serafin et Carmona Christian *Multiplex Financial Networks: Revealing the Level of Interconnectedness in the Banking System*, December 2017, Complex Networks and Their Applications VI. pp 1135-1149

PROGRAMMING TOOLS

C++, PYTHON, R, SQL, TENSORFLOW, CUDA

LANGUAGES

SPANISH: MOTHER TONGUE; ENGLISH: C1 (7.5/9 IELTS); FRENCH: B2 (73/100 DELF); ITALIAN: B2 (167/200 CELI 3); GERMAN: A2