Marco Antonio Gallegos Herrada

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Comercio y Administración 13, Copilco Universidad 04360, Mexico City, Mexico.

EDUCATION

2015 – 2020 **Bachelor of Science**, Mathematics
National Autonomous University of Mexico (UNAM)
Thesis: *A bivariate non-homogeneous Markov chain of order K model applied to ozone and PM_{10} exceedances in Mexico City.*
Supervisor: Dr. Eliane R. Rodrigues

2019 **Undergraduate Student Mobility Program**
École Normale Supérieure – Lyon, France
Relevant Coursework: Integration and Probability

RESEARCH INTERESTS

- Bayesian Statistics
- Time Series Analysis
- Spatial Statistics
- Spatio-temporal Hierarchical Models
- Markov Chain Monte Carlo Methods
- Applied Statistics (environmental sciences, air pollution modelling and statistical ecology)

RESEARCH EXPERIENCE

Jul 2020 – to date **Research Assistant**, Undergraduate Research Assistantship
Project leader: PhD (c) Juan Pablo Diaz-Martinez (Research Associate/Biostatistician at the Toronto Western Lupus Clinic)
Supervisors: Juan Pablo Díaz-Martínez, Ruth Fuentes-García, Osvaldo Espín-García.

- Performed data base screening, cleansing and descriptive statistics analysis of COVID-19 death rates in Mexico.
- Implemented a multi-state hierarchical model in Stan software platform; tested, quantified and improved its sampling cost efficiency.
- Carried out quantitative and graphic analysis of COVID-19 patients in Mexico.
- Synthesized the methodology for the study and helped organize its contents for submission.

WORKS IN PROGRESS

Marco A. Gallegos-Herrada, Eliane R. Rodrigues, Mario H. Tarumoto, and Guadalupe Tzintzun. *A bivariate non-homogeneous Markov chain of order K model applied to ozone and PM_{10} exceedances in Mexico City.*

PRE-PRINTS

Juan Pablo Díaz Martínez, Karen Janik Orozco Becerril, Marco A. Gallegos Herrada, Mayra Alejandra Gutiérrez García, Osvaldo Espín-García and Ruth Fuentes García. *Multi-level multi-state modelling applied to hospital admission in mexican patients with COVID-19.*
doi: https://doi.org/10.1101/2021.05.24.21257752

TEACHING EXPERIENCE

2021 **Teaching Assistant**, Applied Mathematics and Systems Research Institute (IIMAS) UNAM
Course title: Statistical computing

- Planned, supervised and conducted weekly tutorials for 13 undergraduate students.
- Provided online support for classes.
- Provided an introduction to Stan software platform for Bayesian inference.
- Fulfilled grading duties.

2020 **Teaching Assistant**, Faculty of Sciences UNAM
Course title: Stochastic Simulation

- Prepared and conducted weekly tutorials for a class of 18 undergraduate students.
- Provided online support for classes.
- Explained Git version control fundamentals and its implementation in Github, provided an introduction to Julia programming language and Stan software platform for Bayesian inference.
- Fulfilled grading duties.

2018 **Teaching Assistant,** Faculty of Sciences UNAM
Course title: Differential and Integral Calculus II

- Planned, supervised and conducted weekly tutorials for 33 undergraduate students.
- Marked class assignments and examinations
- Counseled students experiencing difficulties with the course.

2018 **Teaching Assistant,** Faculty of Sciences UNAM
Course title: Differential and Integral Calculus I

- Planned, supervised and conducted weekly tutorials for 15 undergraduate students.
- Marked class assignments and examinations.
- Explained difficult concepts and practice exercises.

PROFESSIONAL EXPERIENCE

Sept 2020 – to date **Instructor**, NB Online Academy

- Designed and delivered online courses for undergraduate and graduate international students:
  - Introduction to Geometry (from Euclid to Klein) – Module I
  - Introduction to Mathematical Reasoning and Calculus Fundamentals – Module II and IV

VOLUNTEER WORK

Oct 2017 **Event Planner and host**, 50th National Congress of Mexican Mathematical Society.

ASSOCIATIONS AND AFFILIATIONS

2012-2013 **Peace Ambassador**, Rotary Club

AWARDS AND SCHOLARSHIPS

2020 Undergraduate Scholarship, Institute of Mathematics, UNAM
2019 Student Mobility Program Scholarship, UNAM
2018 Representative Sport Teams Scholarship, UNAM
2015 PEFL Program Scholarship, UNAM

OTHER PROJECTS

July 2021 **Sustained, inclusive and sustainable economic growth for local agriculture**
Collaborative hackathon project, organized by Talent Land and Citibanamex Bank.

May 2021 **Mapping forest fire risk using remote sensing data**
Collaborative project for the Integrative Think Tank on Environmental Resilience, organized by the University of Bath, the Global Challenges Research Fund, UNAM, CIMAT and state of Jalisco.

COMPUTATIONAL SKILLS

Languages: R (proficient in Tidyverse and R Markdown), Python, Julia, JavaScript
Software: Latex, Stan
Version control: Git

LANGUAGES

Fluent in English and French (both written and spoken)
English Language Certification: TOEFL iBT Global Score: 95/120 (CEFR C1)
French Language Certification: DELF B2

REFERENCES

Dr. Eliane R. Rodrigues (thesis supervisor)
Institute of Mathematics (IMATE), National Autonomous University of Mexico (UNAM).
E-mail: eliane@matem.unam.mx

Dr. Ruth Fuentes-Garcia (Professor, research supervisor)
Department of Mathematics, National Autonomous University of Mexico (UNAM).
E-mail: rfuentes@ciencias.unam.mx

Dr. Alan Riva Palacio-Cohen (teaching supervisor)
Department of Probability and Statistics, Research Institute on Applied Mathematics and Systems (IIMAS), National Autonomous University of Mexico (UNAM).
E-mail: alan@sigma.iimas.unam.mx

Dr. Juan Pablo Diaz-Martinez
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