IRVING GÓMEZ MÉNDEZ

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https://github.com/IrvingGomez

Summary

I am a data scientist that merges the experience in applied statistics with a solid theoretical background in machine learning (random forests, neural networks, support vector machines, recommender systems, etc.) and statistics (inference, regression, Bayesian statistics, multivariate analysis, etc.), who enjoys passing from theory to development of meaningful tech products. For instance, I founded *Himmapan Lab*, an academic initiative focused on building modular mathematical software ecosystems for engineering education.

Portfolio

Bayesian statistics

- Notes: https://irvinggomez.github.io/BayesianStatisticsNotes/intro.html
- Codes: https://github.com/IrvingGomez/BayesianStatistics
- Hierarchical models: https://github.com/IrvingGomez/BayesianHierarchicalIncome

Machine learning

- Notes: https://irvinggomez.com/courses/machinelearning/
- Codes: https://github.com/IrvingGomez/MachineLearning

Probability and Statistics

- *Thotsakan Statistics*: An interactive statistical application developed under *Himmapan Lab* at CMKL University (github.com/IrvingGomez/ThotsakanStatistics).
- Notes: https://github.com/IrvingGomez/ThotsakanStatistics/tree/main/docs/theory

Computing Skills

Programming Languages:	Python
Data Visualization:	Plotly
Deep Learning:	TensorFlow
MLOps:	MLflow
Big Data:	PySpark
Bayesian Analysis:	PyMC
Other Languages:	SQL, HTML, CSS, LaTeX

Professional Experience

CMKL University, Thailand
Assistant Professor
March 2024 - To date

- Chair of math pillar and member of the Committee for Undergraduate Studies.
- Founded Himmapan Lab, an academic initiative focused on building modular mathematical software ecosystems for engineering education
- Direction and idealization of *Thotsakan Statistics*, an interactive statistical application.
- Development of competencies' syllabus for the bachelor and master degree in artificial intelligence and computer engineering.
- Supervise undergraduate and graduate teams for research and development of projects in artificial intelligence and statistics:
  - Analysis with missing data.

  - Financial mathematics
  - Natural language processing.
  - Reinforcement learning.
  - Survival analysis.
  - Computer vision.
- Teaching graduate courses: Bayesian statistics, time series and forecasting.
- Teaching undergraduate competencies
  - Statistics: Descriptive statistics, introduction to probability, probability distributions, statistical inference.
  - Artificial intelligence: Reinforcement learning.
  - Mathematics: Differential equations.

Universidad Iberoamericana (Ibero-American University), Mexico
Lecturer
August 2021 - May 2024

- Development and improvement of actuarial subjects' syllabus.
- Teaching undergraduate subjects: Bayesian statistics, machine learning, actuarial probability.

National Electronics and Computer Technology Center (NECTEC), Thailand
Postdoctoral Researcher
March 2023 - February 2024

- Geo-statistical and multivariate analysis.
- Spatial statistical inference for identification of regional clusters, and social inequality.
- Bayesian data analysis to assist policy makers.
- Data wrangling of large data sets for its further statistical analysis.

Banco del Bajío (Bajio Bank), Mexico
Data Scientist
July 2021 - February 2023

- Implementation of models in an AutoML framework.
- Improvement of statistical tools for internal fraud detection.
- Translate business and customer needs to technical language to determine the best model and solution.
- Present results and projects' progress on an executive level.
- Development of end-to-end projects to evaluate prospects' credit risk.
- Data wrangling and feature engineering from large databases, merging public and private information sources of heterogeneous data.
- Implementation and evaluation of algorithms to estimate the stability of economic sectors.
- Robust statistical inference to improve prospects' estimations.
- Geo-statistical analysis to assist decision making.

Centro de Investigación en Matemáticas (Center for Research in Mathematics, CIMAT), Mexico
Postgraduate Student in Probability and Statistics
August 2014 - June 2021

- Development and implementation of state-of-the-art random forests algorithms to handle data with missing values.
- Implementation of neural networks for recommender systems with partial information.
- Implementation of methodologies for control quality with heavily censored data.
- Statistical consulting for the automotive industry, improving its warranty management.
- Reliability analysis for the food industry, increasing preference of consumers.
- Teaching assistant in undergraduate and graduate subjects: Statistical inference, statistical models.

Academic Qualifications

Ph.D. in Probability and Statistics ..... 2017 - 2021
Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico

Research Stay 2020
Institut National de Recherche en Informatique et en Automatique (National Institute for Research in Digital Science and Technology, Inria), Lille, France

M.Sc. in Probability and Statistics
Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico ..... 2014 - 2016

B.Eng. in Mathematics ..... 2009 - 2014
Instituto Politécnico Nacional (National Polytechnique Institute, IPN), Mexico City, Mexico

Exchange Student 2012
Universidade Estadual de Campinas (State University of Campinas, UNICAMP), Campinas, Brazil
Scholarship held by the Instituto Politécnico Nacional (IPN)

David Sprott Award, 2015

Annual prize granted by the Centro de Investigación en Matemáticas (CIMAT) to the best master's exam in the area of statistics.

Publications

Gómez-Méndez, Irving and Chainarong Amornbunchornvej (2026). "Regional and spatial dependence of poverty factors in Thailand, and its use in Bayesian hierarchical regression analysis". In: *Statistical Journal of the IAOS*. DOI: 10.1177/18747655261416694.

Gómez-Méndez, Irving et al. (2025). "Benchmarking Classical, Machine Learning, and Bayesian Survival Models for Clinical Prediction". In: *arXiv preprint arXiv:2509.10073*.

Linphrachaya, Nanmanas, Irving Gómez-Méndez, and Adil Siripatana (2025). "Geological Inference from Textual Data using Word Embeddings". In: *arXiv preprint arXiv:2504.07490*.

Gómez-Méndez, Irving and Chainarong Amornbunchornvej (2024). "Income, education, and other poverty-related variables: A journey through Bayesian hierarchical models". In: *Heliyon* 10.6.

Gómez-Méndez, Irving and Emilien Joly (2023a). "On the consistency of a random forest algorithm in the presence of missing entries". In: *Journal of Nonparametric Statistics*. DOI: 10.1080/10485252.2023.2219783.

Gómez-Méndez, Irving and Emilien Joly (2023b). "Regression with missing data, a comparison study of techniques based on random forests". In: *Journal of Statistical Computation and Simulation*. DOI: 10.1080/00949655.2022.2163646.

Selected Talks

A journey through Bayesian hierarchical models: Analyzing income and education in Thailand 04/2024
CMKL Special Talk

Introduction to probabilistic graphical models and causal reasoning 01/2024
CIMAT Statistics Seminar

An introduction to causality 01/2022
Mathematical Association of Cambodia (MAC)

Some ideas for random forests with missing values 03/2020
Inria Sequel Seminar

Languages

Spanish	Native
English	Fluent
Portuguese	Fluent
Thai	Basic (learning)