

# IRVING GÓMEZ MÉNDEZ



<https://irvinggomez.com>



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<https://github.com/IrvingGomez>

## Summary

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I am a mathematician that merges the experience in applied statistics and data science with a solid theoretical background in statistics (Regression, Inference, Multivariate Analysis, Bayesian Statistics, etc.) and machine learning (Random Forests, Neural Networks, Support Vector Machines, Recommender Systems, etc.) who enjoys passing from theory to development of meaningful tech products.

A portfolio of past and current projects, talks and courses can be found at <https://irvinggomez.com> while their respective codes can be found at <https://github.com/IrvingGomez>.

## Computing Skills

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Programming Languages:	Python, Julia, R
Data Visualization:	Plotly, Tableau, Shiny, Ggplot2
Deep Learning:	TensorFlow
Big Data:	Pyspark
Other Data Analysis:	SPSS, Google Analytics
Other Languages:	SQL, HTML, CSS, L <sup>A</sup> T <sub>E</sub> X

## Professional Experience

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### National Electronics and Computer Technology Center (NECTEC), Thailand

#### Postdoctoral Researcher

March 2023 - To date

- Analysis of data and deployment of artificial intelligence for monitoring and evaluating national strategy and country reforms.

### Universidad Iberoamericana (Ibero-American University)

#### Lecturer

August 2021 - To date

- Development and improvement of actuarial subjects' syllabus.
- Teaching undergraduate subjects.

*Bayesian Statistics 2022 - 2023*

*Machine Learning 2021 - 2022*

*Actuarial Probability 2021*

### Banco del Bajío (Bajío Bank)

#### Sr. Data Scientist

July 2021 - February 2023

- Improvement of statistical tools for internal fraud detection.
- Development of end-to-end projects to evaluate prospects' credit risk.
- Present results and projects' progress on an executive level.
- Translate business and customer needs to technical language to determine the best model and solution.
- 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 help in decision making.
- Data mining for marketing campaigns and cybersecurity projects.
- Implementation of models in an AutoML framework.

## **Centro de Investigación en Matemáticas (Center for Research in Mathematics, CIMAT)**

### **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.  
*Research stay at Inria Lille-Nord Europe, France.*
- Development of methodologies for detection of illegal traffic of species in America.  
*Interdisciplinary workshop at Center for Research and Advanced Studies of the National Polytechnic Institute (Cinvestav).*
- Implementation of methodologies for control quality with heavily censored data.
- Statistical consulting for the automotive industry, improving its warranty management.  
*Industrial workshop at CIMAT.*
- Reliability analysis for the food industry, increasing preference of consumers.  
*Industrial workshop at CIMAT.*
- Teaching assistant in undergraduate and graduate subjects.  
*Statistical Inference 2015 - 2019*  
*Statistical Models 2017 - 2019, 2021*

## **OPI Analytics**

### **Sr. Data Scientist**

August 2020 - December 2020

- Development and improvement of end-to-end projects for sale's forecasts.
- Monitor and validation of building blocks.
- Automation of data science processes.
- Validation of pricing strategies.

## **Academic Qualifications**

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**PhD in Probability and Statistics** ..... 2017 - 2021

Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico

Thesis: *Random Forests and Autoencoders with Missing Data*, under the direction of Dr. Emilien Joly

**Research stay** ..... 2020

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

*Actively Querying Missing Information Using Neural Networks*, in collaboration with Dr. Jill-Jënn Vie

### **MSc in Probability and Statistics**

Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico ..... 2014 - 2016

**Mathematical Engineer** ..... 2009 - 2014

Instituto Politécnico Nacional (National Polytechnic Institute, IPN), Mexico City, Mexico

Graduate by completion of master's degree credits

**Exchange Student** ..... 2012

Universidade Estadual de Campinas (State University of Campinas, UNICAMP), Campinas, Brazil

Scholarship holder by the Instituto Politécnico Nacional (IPN)

# David Sprott Award, 2015

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

## Publications

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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

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- 01/2022  
Mathematical Association of Cambodia (MAC), Virtual  
*An Introduction to Causality*
- 12/2020  
Hispanohablante Seminar, Guanajuato  
*Consistency of a Random Forest Algorithm with Missing Entries*
- 03/2020  
Inria Sequel Seminar, Lille  
*Some ideas for random forests with missing values*
- 01/2020  
TRIPODS workshop CIMAT-University of Arizona, Guanajuato  
*Some ideas for random forests with missing values*

## Certifications

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- Google Analytics*
- Data Sets with SQL*
- SQL for Data Science*
- Statistical Analysis with SPSS*

## Languages

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Spanish	Native
Portuguese	Fluent
English	Fluent
French	Basic
Russian	Basic
Thai	Elemental (learning)