

# Rodrigo Kang

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## Profile Summary

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Physicist and Data Scientist with extensive experience in machine learning, reinforcement learning, quantum optimal control theory, and computational modeling. Strong background in probability, statistics, linear algebra, advanced mathematics, quantum computing, and computational physics. Skilled in leading scalable projects and supporting data-driven decision-making through innovative, consistent, and effective solutions that bridge scientific insight and applied AI.

## Work Experience

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### Lead Data Scientist

Mar 2025 - Present

YPF Tecnología S.A. (Y-TEC)

I lead the design and development of data-driven solutions at the cutting edge of industrial R&D, integrating machine learning, reinforcement learning, optimization, numerical simulation, and quantum computing to solve complex challenges in the O&G sector. My work bridges scientific modeling and applied AI, spanning projects in predictive modeling, production optimization, quantum computing applications, and computer vision for rock image analysis, with a strong focus on combining physics-based models and AI to enhance interpretability, robustness, and scalability.

### CRM Supervisor

Jan 2025 - Mar 2025

Cencosud S.A.

Leading the CRM team of Data Scientists and Data Analysts to enhance customer segmentation, churn prediction, and recommendation systems. Overseeing the development and deployment of machine learning models using Python, SQL, and AWS. Managing data-driven initiatives to improve customer engagement and business performance.

### Data Scientist

Jul 2023 - Dec 2024

Cencosud S.A.

Developed predictive models by combining complex SQL queries in AWS Redshift with machine learning algorithms in Python and AWS SageMaker to support informed decision-making in retail. Built recommendation systems, customer segmentation, and churn prediction models to provide actionable insights for business strategy.

### Gas Trading & Operations Research Analyst

Apr 2020 - Jul 2023

ECS S.A. - ENGIE GROUP

Designed and implemented commercial strategies and discrete optimization algorithms using operations research techniques for the natural gas market. Developed scalable Python algorithms for profit margin optimization through linear programming and mathematical modeling with graph theory, taking into account contractual constraints.

### Programming & Balancing Analyst

Dec 2017 - Mar 2020

TGN S.A. - TECHINT GROUP

Analyzed large volumes of daily data to authorize loader transportation within the TGN system, taking into account operational capacity and regulatory requirements. Prepared daily and monthly balance sheets. Monitored, determined, and controlled operational imbalances across all loaders.

## Education

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### M.Sc. in Physics

Dec 2021

Universidad Nacional de La Plata

Graduated with a GPA of 8.40/10, specializing in Quantum Optimal Control Theory.

### Doctor of Philosophy - PhD in Physics (not completed)

Feb 2022 - Dec 2024

Universidad Nacional de La Plata

Conducted advanced research on hadronic physics, specifically on pion production mechanisms via neutrino scatter-

ing. Developed and applied computational models for data analysis.

## Licenses & Certifications

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### **Microsoft Azure AI Fundamentals (AI-900)**

*Udemy*

*Feb 2025*

Introduction to AI concepts and Microsoft Azure AI services for practical applications.

### **Introducción a Microsoft Azure para principiantes**

*Udemy*

*Feb 2025*

Basic overview of Microsoft Azure cloud services and core functionalities.

### **Masterclass en Inteligencia Artificial**

*Udemy*

*Feb 2025*

Comprehensive training on AI concepts, techniques, and Python implementations.

### **AWS SageMaker Practical for Beginners**

*Udemy*

*Sep 2024*

Hands-on experience deploying machine learning models with AWS SageMaker.

### **Time Series Analysis in Python**

*Udemy*

*Sep 2024*

Techniques for analyzing, modeling, and forecasting time series data using Python.

### **Machine Learning Model Deployment with Streamlit**

*Udemy*

*2024*

Deploying machine learning models via interactive web applications using Streamlit.

### **Curso completo de Inteligencia Artificial con Python**

*Udemy*

*May 2024*

End-to-end AI projects and Python-based implementations of machine learning algorithms.

### **Curso completo de Machine Learning: Data Science en Python**

*Udemy*

*Apr 2024*

Comprehensive coverage of machine learning workflows, data preprocessing, and predictive modeling.

### **Desarrollo web full Stack: Flask, PostgreSQL, JavaScript**

*Udemy*

*Apr 2024*

Full-stack web development with Flask, database integration, and frontend JavaScript.

### **Aprende Git y GitHub: El control de versiones de la A a la Z**

*Udemy*

*Jan 2024*

Version control, repository management, and collaborative development workflows using Git and GitHub.

### **QUANT: Quantitative Finance**

*UCEMAX*

*Nov 2023*

Quantitative finance techniques, financial modeling, and portfolio analysis.

### **Computational Tools for Applied Mathematics**

*Universidad Nacional de La Plata*

*Jul 2022*

Advanced computational methods and numerical techniques for applied mathematics problems.

### **El Arte de Negociar**

*IAE Business School*

*Sep 2022*

Negotiation strategies and techniques for business and professional settings.

### **Probability and Statistics in Experimental Physics**

*Universidad Nacional de La Plata*

*Dec 2021*

Statistical methods and probability theory applied to experimental physics.

Overview of natural gas production, transportation, and market operations.

## Programming Languages

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### **Linux**

*Bash scripting, system administration, and shell automation.*

### **Python**

*NumPy, SciPy, Pandas, Matplotlib, Seaborn, Scikit-learn, Keras, PyTorch, TensorFlow, NetworkX, Flask.*

### **SQL**

*SQLite and PostgreSQL for database management and complex queries.*

### **AWS**

*SageMaker, Redshift for cloud-based data processing and ML deployment.*

### **Git**

*Version control and collaborative development via GitHub.*

### **Other Languages & Tools**

*L<sup>A</sup>T<sub>E</sub>X, R, C++, HTML5, CSS3.*

## Languages

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### **Spanish**

*Native proficiency.*

### **English**

*Professional proficiency (C1).*