

# Melkyn Quintana

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## Professional Profile

I am a senior Latin American astronomy student with a strong background in mathematics, physics, statistics, data analysis, and Python/C programming. I'm passionate about cosmology, black holes, and everything that helps us understand the evolutionary history of the universe. In fact, my research work for my graduation thesis focuses on constraining cosmological parameters through the comparison and statistical analysis of SNe Ia data. Throughout my academic and professional career, I have acquired strong learning and problem-solving skills, which allow me to easily adapt to new work and collaborative environments.

## Education

**B. Sc. in Astronomy** 2019 – Actual

*University of Antioquia*

- **Courses:** Computational Methods, Modern cosmology, Modern astrophysics, Stellar astrophysics, Galactic and extragalactic astrophysics, Celestial mechanics, Astro-statistics, Quantum Mechanics, Relativity and Gravitation.

**Technician in Industrial Instrumentation** 2017 – 2018

*Servicio Nacional de Aprendizaje (SENA)*

**Technical High School with emphasis on electronics** 2013 – 2018

*Technic and Industrial Institute Rafael Reyes*

## Work Experience

**Freelancer** December 2024 - Actual

*Outlier*

- Contribute to projects focused on developing and optimizing prompts, reviewing code, and evaluating responses for Large Language Models (LLM) training. Participate in voice recording initiatives to enhance model accuracy and performance.

**3D Image Annotator** January 2025 - May 2025

*CloudFactory*

- Conducted detailed roof modeling and annotation using Nearmap's 3D satellite imagery platform. Utilized CAD-like tools to trace and refine roof structures, ensuring accurate measurements and improved visual clarity by correcting distortions in 3D renderings caused by image resolution limitations.

## Tech Skills

**Operating Systems:** GNU/Linux, Windows

**Programming Languages:** Python, C, Bash, SQL, ssh, JavaScript

**Software:** Git, L<sup>A</sup>T<sub>E</sub>X, Irf

**Tools:** Statistics, Bayesian Inference, Monte Carlo methods, emcee, ML, Big Data analysis, pandas, Numeric methods, N-Body Simulations, TensorFlow, React, Power BI.

## Courses and Certificates

**BOOTCAMP TALENTO TECH - DATA ANALYSIS ADVANCED LEVEL** 2025

*(159 hrs)*

*Ministry of Information and Communications Technology of Colombia / UI Training*

**DATA - DRIVEN ASTRONOMY (20 hrs)** 2022

*Coursera / University of Sydney*

## **SPECIALIZED PROGRAM - PYTHON FOR EVERYBODY (80 hrs)**

2022

*Coursera / University of Michigan*

This specialized program is composed of 5 courses:

- Programming for Everybody (Getting Started with Python)
- Python Data Structures
- Using Python to Access Web Data
- Using Databases with Python
- Capstone: Retrieving, Processing, and Visualizing Data with Python

## **INTRODUCTION TO PYTHON PROGRAMMING (20 hrs)**

2022

*Coursera / University of Pennsylvania*

## **DATA ANALYSIS USING PYTHON (20 hrs)**

2022

*Coursera / University of Pennsylvania*

## **Languages**

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**Spanish** Native Speaker

**English** Fluent (B2 - B2+)

## **Fields of Interest**

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Galaxies and Cosmology. Computational Astrophysics. Statistics. Data Analysis. Large-scale structure formation.

## **Additional Education**

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### **12th AstroTwinCoLo 2024**

November 2024

*University of Antioquia - Medellín (Colombia)*

Lectures and hands-on applications on '*weak gravitational lensing technique and its astrophysical and cosmological applications*' by PhD Divya Rana.

### **1st Fargo3D Workshop**

January 2024

*Adolfo Ibañez University - Santiago de Chile (Chile)*

Workshop focusing on the use of Fargo3D software and its integration with RADMC-3D software.

### **11th AstroTwinCoLo 2023**

November 2023

*University of Antioquia - Medellín (Colombia)*

Lectures and hands-on applications on '*cosmology, large-scale structure, and simulations*' with SWIFT code by PhD Matthieu Schaller.

### **10th AstroTwinCoLo 2022**

December 2022

*University of Antioquia - Medellín (Colombia)*

Lectures and hands-on applications on '*planet formation with the ALMA telescope*' and CASA software by PhD Nienke van der Marel and '*the long impact-tail of astronomical research*' by PhD Pedro Russo.

## **Participation in events**

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(Poster presentation) **Analyzing variability in the Hubble constant from Type Ia Supernova data concerning the Hubble tension.**

November 2024

*VII Colombian Congress of Astronomy and Astrophysics, Bucaramanga, Colombia*