

# MICHAEL GARCIA

Data Engineer | Data Modeling (Star Schema), ETL/ELT (Airflow, dbt) & Robust Python Development

@ michael.garcia.73@gmail.com    📍 Aix-les-Bains, France, willing to relocate near Geneva  
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## PROFILE

PhD Physicist leveraging 15+ years of **analytical rigor** to build and optimize **production data systems**. Expertise in modern **Data Engineering** practices (Airflow, dbt, Cloud-Native AWS) and software development. Strong problem-solver proven in international R&D environments, dedicated to **data quality** and robust architectures. Highly adaptable with a strong commitment to rapidly acquiring new skills (streaming, PL/SQL).

## PROFESSIONAL EXPERIENCE

### Data Engineer & Software Developer

#### Autonomous Projects & Consultancy Focus

📅 2024 – Present    📍 Aix-les-Bains, France

#### Bank Branch Footfall Analytics – Production Pipeline

- End-to-end system: FastAPI → Implementation of **ETL processes** using PySpark transformations → Parquet/DuckDB → Streamlit dashboard
- **Airflow Orchestration**: Real-time DAG + backfill DAG for fault tolerance (managing complex data flow dependencies)
- **Data Modelling**: Designed and implemented data structures optimized for OLAP (DuckDB)

#### Financial Sectoral Analysis – Cloud-Native AWS Data Hub

- Multi-source ETL: **3 APIs** (Alpha Vantage, Yahoo Finance, FRED) → S3 → Redshift
- Infrastructure: Terraform IaC, Data Orchestration with **Airflow (MWAA)**, CloudWatch monitoring
- Data transformations: **dbt Core** for ELT, implementing **Star Schema** principles for analysis
- **Data Quality & Lineage**: Used **dbt automated testing (90%+ coverage)** to ensure data integrity and generate **data lineage** documentation.

### Physics & Chemistry Teacher

#### Ministry of Education

📅 2013 – Present    📍 Savoie, France

#### Software Development & Digital Transformation

- Developed SaaS application for classroom planning (used by **20+ teachers**): Python/Streamlit → pure HTML/JavaScript for **GDPR compliance** (client-side data processing)

### Physics Researcher (PhD)

#### LIPhy – CNRS

📅 2009 – 2013    📍 Grenoble, France

Scientific Computing, Large Dataset Analysis & Validation

## KEY COMPETENCIES

- Analytical Rigor (PhD)
- Data Quality Focus
- International Collab.& Leadership
- Adaptability & Learning
- Clean Code Principles

## TECHNICAL SKILLS

### Data Engineering Stack

- **Orchestration**: Airflow (MWAA), DAG complexity management
- **Transformation**: dbt (Core, Automated Testing), ETL/ELT pipeline implementation
- **Big Data**: PySpark, HDFS (Familiarity)
- **Cloud/IaC**: AWS (S3, Redshift), Terraform, Docker, Kubernetes

### Data Modelling & Databases

- **Databases**: PostgreSQL (**Advanced**), Redshift, DuckDB (OLAP)
- **SQL**: Advanced SQL scripting, Query Optimization, Transaction Management
- **Modelling**: **Star Schema**, Normalisation, Data Mart design

### Programming & Software Engineering

- **Core Languages**: Python (**Advanced**, Data Processing Focus), SQL, JavaScript
- **Web/APIs**: FastAPI, Flask, REST APIs
- **Practices/CI/CD**: Git/GitHub Actions, Agile, Clean Code (SOLID)

## LANGUAGES

French    ●●●●●●  
English    ●●●●●●  
Professional working proficiency (100% English in PhD research collaboration)

## EDUCATION

### Data Engineering Intensive Training

#### Data-Upskilling (400h program)

📅 2024    📍 Savoie, France

Focus on production-ready skills: Git workflows, testing, CI/CD, clean code, data tools (Spark, Airflow, dbt), cloud deployment, SQL.

- Built and automated data processing pipelines for optical microscopy experiments:
  - Reduced analysis time by **50%** via optimized **ImageJ/IDL routines**, accelerating the experimental feedback loop.
  - Analysed complex video datasets, extracting 50K+ trajectories, requiring robust **data extraction and cleaning**.
- Applied **scientific rigor** to implement simulation models for **cross-validation** against experimental results (directly comparable to software validation/testing).
- **International collaboration**: 6+ researchers across 5 countries (100% English).

## PROFESSIONAL DEVELOPMENT

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### Technical Deep Dive

#### Focus on Required Stack

- 📅 2025      📍 Savoie, France
- Advanced Data Modelling (Star Schema implementation, Lakehouse principles) and Relational Database deep-dive (Query Optimization, stored procedures concept).
- Initiating PoC on **data streaming** and **messaging systems** (Kafka/RabbitMQ) to meet modern data platform requirements.

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### Ph.D. in Physics for Life Sciences

#### Université Grenoble Alpes

📅 2009 – 2013      📍 Grenoble, France

*Optical microscopy, large-scale data analysis, scientific computing*

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### M.Sc. Statistical Physics

#### École Normale Supérieure de Lyon

📅 2005 – 2007      📍 Lyon, France

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### B.Sc. & M.Sc. (1st year) in Physics

#### Université Savoie Mont Blanc

📅 2001 – 2005      📍 Savoie, France

## AVAILABILITY

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Available for relocation to Geneva in one month.