

# MICHAEL GARCIA

Software Engineer | Full-Stack Development & Data Infrastructure

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

PhD Physicist with 15+ years cross-functional experience (research, teaching, banking). Proven ability to build production systems, automate workflows, and collaborate internationally. Strong problem-solver combining analytical rigor with modern software practices.

## PROFESSIONAL EXPERIENCE

Data Engineer & Software Developer

### Personal Projects

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

#### Bank Branch Footfall Analytics – Production Pipeline

- End-to-end system: FastAPI → PySpark transformations → Parquet/DuckDB → Streamlit dashboard
- Airflow orchestration: Real-time DAG + backfill DAG for fault tolerance
- Business impact: Optimized staffing and resource allocation based on visitor flow patterns

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

- Multi-source ETL: 3 APIs (Alpha Vantage, Yahoo Finance, FRED) → S3 → Redshift
- Dataset: 500+ stocks across 11 sectors, daily updates
- Infrastructure: Terraform IaC, AWS MWAA (Managed Airflow), CloudWatch monitoring
- Data transformations: dbt Core with automated testing (90%+ coverage)
- Advanced metrics: Sharpe ratios, VaR calculations, sector correlation analysis

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)
- Trained 10+ colleagues on digital tools (Google Drive, collaborative platforms)
- Organized 5+ interdisciplinary science projects and competitions
- Taught 2,000+ students over 12 years

Physics Researcher (PhD)

### LIPhy – CNRS

📅 2009 – 2013    📍 Grenoble, France

Automated Data Processing & Scientific Computing

## KEY COMPETENCIES

- International Collab.
- Problem Solving
- Team Management
- Results-Driven
- Adaptability

## TECHNICAL SKILLS

### Full-Stack Focus

- Frontend/Backend: React (Learning), Java & Spring (Learning), FastAPI, Flask
- Core Languages: Python (Advanced), SQL, JavaScript
- APIs: REST APIs
- Databases: PostgreSQL, Redshift, DuckDB

### DevOps & Data Infrastructure

- Containers/IaC: Docker, Kubernetes, Terraform
- CI/CD: GitHub Actions, testing frameworks (unittest, pytest)
- Cloud: AWS (S3, Redshift, MWAA)
- Data Tools: PySpark, dbt (Automated testing), ETL/ELT

### Software Engineering & Scientific Computing

- Practices: Git (Collaboration), Agile, Clean Code (SOLID), GDPR compliance
- Scientific: IDL (scientific computing), ImageJ macros, C (from scratch simulations)

## LANGUAGES

French

English

100% English in PhD research collaboration



## EDUCATION

Data Engineering Intensive Training

### Data-Upskilling (400h program)

📅 2024    📍 Savoie, France

Hands-on training (2,000+ professionals trained): Modern software engineering practices (Git workflows, testing, CI/CD, clean code), data tools (Spark, Airflow, dbt), cloud deployment, SQL. Focus on production-ready skills.

- Built complete data pipeline for optical microscopy experiments (**5-10 TB** video datasets):
  - **Image processing automation:** ImageJ macros (JavaScript), **reduced processing time by 50%**
  - **Data extraction:** Custom routines (IDL) analyzing **500+ videos, extracting 50K+ trajectories**
  - **Statistical computing:** Automated analysis and reporting
- Developed simulation models (IDL) for comparative validation against experimental results
- Parameter optimization: viscosity, volumetric concentration variations
- **International collaboration:** 6+ researchers across 5 countries (Georgia, India, Italy, Lithuania, Germany) — 100% English
- Presented at **3 international conferences** (Germany, Switzerland, India); published peer-reviewed paper

## Administrative Manager & Client Advisor

### Banque de Savoie & Crédit Agricole des Savoies

- 📅 2007 – 2009      📍 Savoie, France
- Managed compliance, reporting, and **team of 4-5 reception staff**
- Coordinated operations across **3 branch offices**
- Client portfolio management (**300+ clients**) and banking product sales

## PROFESSIONAL DEVELOPMENT

### Ongoing Technical Training

#### Personal project

- 📅 2025      📍 Savoie, France
- Spring Boot & Java ecosystem (backend frameworks)
- React frontend development
- *Self-directed learning to align with CERN software stack requirements*

## CAPES Physics-Chemistry & Teaching Diploma (DU MEEF)

### Université Savoie Mont Blanc

📅 2015 – 2016      📍 Savoie, France

*Professional certification for secondary education teaching*

## Ph.D. in Physics for Life Sciences

### Université Grenoble Alpes

📅 2009 – 2013      📍 Grenoble, France

*Optical microscopy, data analysis, scientific computing*

## M.Sc. Statistical Physics & Agrégation Preparation

### École Normale Supérieure de Lyon

📅 2005 – 2007      📍 Lyon, France

*Master thesis: 1D turbulence simulation (C from scratch) to validate intermittency divergence at small scales*

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

### Université Savoie Mont Blanc

📅 2001 – 2005      📍 Savoie, France

*DEUG Mathematics-Computer Science, Physics License, Master 1*

## AVAILABILITY

French citizen, eligible CERN Member States. Available for relocation to Geneva. Flexible for operational requirements.