

# Antonio Hidalgo

Computer Engineer

Expert in Metaheuristic Algorithms and Optimization Applied to Decisions

## Professional Summary

I am a Computer Engineer specialized in metaheuristic techniques and multiobjective optimization, applied both to clinical research and quantitative financial analysis, with more than fifteen years of experience in critical sectors such as healthcare, finance, and academic research. Throughout my career, I have led and developed solutions based on artificial intelligence, multiobjective optimization, and advanced data analysis, applied to both clinical environments and high-performance quantitative models.

I began my career at Siemens Healthcare Diagnostics, where I was recognized for my ability to connect technologies, automation, and clinical processes. There, I designed analytical tools such as Laboratory Information Systems (LIS), HL7/ASTM integrations, and automated analytical management systems (DMS), improving efficiency and operational workflows across multiple laboratories.

Later, I joined the Bank of Spain, an environment that allowed me to deepen my expertise in quantitative analysis, predictive models, and large-scale analytical automation. During this stage, I led projects based on machine learning, time-series modeling, statistical analysis, and computational optimization—skills that I later reinforced through academic research.

I currently work at Abbott Diagnostics, where I am a specialist in automated laboratory chains (AMS). My responsibilities focus on maximizing the efficiency of clinical laboratories through the design, configuration, and improvement of automated systems and their integration with databases, servers, and LIS platforms. My work combines deep technical expertise with a strong operational focus on results and clinical value.

In parallel, I am developing my doctoral research at the University of Málaga, focused on intelligent metaheuristic systems and multiobjective optimization applied to both clinical laboratories and quantitative models. I have participated in projects such as ParetoInvest, clinical rule systems, and AI-based decision-support platforms.

My academic background includes a degree in Computer Engineering, a second degree in Software Engineering, a Master's in Artificial Intelligence, and a postgraduate certificate in Computer Engineering. I live in Málaga and combine industrial experience with applied research, always oriented toward transforming data, processes, and algorithms into real, measurable outcomes that help improve people's lives.

## Professional Experience

### Abbott Diagnostics — 2022 · Present

- Specialist in automated clinical laboratory chain management software (AMS).
- Optimization of clinical workflows.
- Administration of relational databases (Oracle, MySQL, SQL) and Linux/Windows servers.
- Expert in integrations using clinical communication protocols (HL7, ASTM).
- Advanced technical support for clinical automation.

### Bank of Spain — 2018 · 2022

- Predictive quantitative models and statistical analysis.
- Supervised and unsupervised machine learning.
- Analytical automation in production systems.
- Advanced programming in Python, SQL, and FAME.
- Integrations using financial protocols (RIAD).

### Siemens Healthcare Diagnostics — 2009 · 2018

- HL7/ASTM integrations and LIS/DMS systems.
- Automation and validation of clinical processes.
- Data analysis, statistics, and clinical dashboards.
- Development of solutions in C#, Python, and Linux.

## Education

- PhD in Computational Intelligence — Ongoing, University of Málaga.
- Master's Degree in Artificial Intelligence — University of Málaga (2019).
- Bachelor's Degree in Software Engineering — University of Málaga (2017).
- Postgraduate Certificate in Computer Engineering — University of Málaga (2015).
- Degree in Computer Engineering — University of Málaga (2009).

## Featured Projects

- ParetoInvest — Multiobjective financial optimization.
- Clinical Optimization — expert-rule systems and underdiagnosed patient indexes.
- SITi, SMD, SIS systems — University of Málaga.
- ARIMA, ARCH, and ARMA models applied to predictive maintenance.

## Personal Information

- LinkedIn: [linkedin.com/in/antoniohidalgo00/](https://www.linkedin.com/in/antoniohidalgo00/)
- Location: Málaga, Spain

## Publications

## **Publications**

- **Efficient selection of investment portfolios in real-world markets: a multi-objective optimization approach**

[MDPI Algorithms \(link\)](#)

- **ParetoInvest: Integrating Real-Time Financial Data and Multi-Objective Meta-heuristics for Portfolio Optimization**

[ScienceDirect \(link\)](#)

- **A Web-Based Decision Support Platform for Multi-objective Optimization of Diagnostic Efficiency in Clinical Laboratories**

[Expert Systems With Applications \(Under Review\)](#)