Joan Salvà Soler

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English, Catalan, Spanish, German

Experience

- **H2O.ai** — Vienna, Austria
  ML Software Engineer — *May 2025 - Present*
  - **LLM-Studio**: Core developer of H2O.ai's LLM-Studio, a platform for fine-tuning and deploying LLM-based applications. Tools: **Python, TypeScript, Docker, AWS, GCP, Kubernetes, PyTorch, FastAPI, MCP**
- **Quantagonia** — Vienna, Austria / Munich, Germany
  Research Engineer — *Nov 2023 - May 2025*
  - **LLMs for optimization modeling**: Core developer of DecisionAI - an LLM-based natural language interface for optimization modeling. Research and development of the complex multi-agent application, including productization, API development, and client library creation. Tools: **LangChain, LangGraph, FastAPI**
  - **MIP solver development**: Research and implementation of new features for Quantagonia's Hybrid Solver. Successfully implemented Feasibility Jump as an LP-free primal heuristic (7% improvement on MIPLIB2017 benchmarks). Evaluated different branching strategies, including ML-driven techniques. Tools: **C++, CMake**
  - **ML-based hyperparameter tuning**: Used Bayesian optimization to tune Quantagonia's MIP solver. Clustered optimal sets to develop an automatic configuration selection that was implemented in production. Tools: **SMAC**
- **SBA Research** — Vienna, Austria
  Machine Learning Research Intern — *Mar 2023 - Nov 2023*
  - **Landslide detection on satellite imagery**: Architecture and development of a Machine Learning solution for Landslide Detection based on computer vision and change-detection methods on satellite imagery. Part of the state-funded project gAia. Tools: **PyTorch, QGIS, GDAL**
- **Accenture** — Barcelona, Spain
  Data Scientist — *Apr 2021 - Oct 2022*
  - **ML & Optimization**: Experience in multiple projects for large customers, including Sales Prices Optimization, Demand Forecasting, Supply-Chain Optimization, Port Operations Scheduling, and Warehouse Stock Optimization. Tools: **scikit-learn, OR-Tools**

Education

- **Technical University of Vienna** — Vienna, Austria
  MSc. in Data Science; Graduated with Honors — *2022 – 2025*
  - Two minors: **Machine Learning and Statistics** + **Optimization and High-Performance Computing**
  - Teaching: Assistant for the courses Advanced Methods for Regression and Classification, and Data Analysis
- **Polytechnic University of Catalonia** — Barcelona, Spain
  BSc. in Mathematics — *2017 – 2021*
  - Specialized in Algorithmics, Discrete Mathematics, and Mathematical Optimization. Accenture Scholarship for Academic Merit, leading to an 8-month internship

Research and Publications

- **Exact Methods for the Site Assessment Routing Problem (first-author paper)**: Achieved state-of-the-art results and proved theoretical dominance of our proposed formulation in this novel routing problem. Tools: **Gurobi**
- **Diffusion Models for Combinatorial Optimization (Master Thesis)**: My work bridges the gap between ML for graph-representable COPs and metaheuristics by proposing a diffusion-based GPU-accelerated evolutionary algorithm
- **A Fast GRASP Metaheuristic for the Trigger Arc TSP (first-author arXiv paper)**: Developed a metaheuristic for the Trigger Arc TSP problem. It finished top-3 at MESS 2024 competition. Tools: **C++**

For my complete list of projects, please visit my blog and my GitHub.

Programming Skills and Certifications

- **Languages**: Python, C++, R, Java — **Technologies**: GCP, PyTorch, LangChain, Git
- **GCP Professional Machine Learning Engineer** - Google Cloud Platform - Issued Sep 2024