Daniel G. Alfert

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Profile

Junior quantitative and data-focused graduate with a strong mathematical foundation, research experience in computational modeling, and hands-on backend engineering experience. Background spans statistics, time series analysis, and applied Python, with proven ability to work independently on ill-defined technical problems.

Education

MSc in Quantum Information Science Sep 2023 – Jan 2026
University of Copenhagen

- Thesis: *Learning Local Gibbs States from Noisy Shallow Quantum Circuits*
- Simulated noisy quantum circuits using tensor networks (Python, Quimb); studied depolarizing and amplitude damping noise under k-local, shallow-circuit assumptions
- Coursework: Quantum Information Theory (12/12), Analysis in QIT (10/12), Quantum Error Correction (10/12), Advanced Algorithms and Data Structures (12/12), Time Series Analysis (10/12)

BSc in Mathematics and BSc in Computer Science (concurrent) Sep 2017 – Jul 2023
University of Granada Grade: 7.3 / 10

- Thesis: *Fundamentals of Quantum Computing*; simulations of basic quantum algorithms using Qiskit
- Coursework: Stochastic Processes, Statistical Inference, Linear Algebra (6 courses)

Technical Skills

Programming	Python (NumPy, Pandas, scikit-learn, Quimb, Qiskit), C++ (STL, algorithmic problem solving), JavaScript (Vue.js)
Statistics / Data	Time series (AR, MA, ARIMA, ARIMAX), linear & logistic regression (L1/L2), Gaussian Mixture Models, hypothesis testing
Systems	Linux, Git, GitHub Actions, Docker, Nginx, systemd, CI/CD
Databases	PostgreSQL, MariaDB, SQLite; raw SQL (joins, grouping) and ORMs
Languages	English (fluent), Spanish (native)

Experience

Software Engineer (Student) Jun 2024 – Aug 2025
Novo Nordisk — Quantum Computing Programme

- Built a greenfield internal knowledge platform for quantum researchers in a 2-person team with minimal guidance
- Implemented **80% of the codebase**, including backend architecture and authentication
- Designed JWT-based access and refresh token flows using secure HTTP-only cookies
- Developed async REST APIs using FastAPI; managed relational data across **15 tables**
- Delivered a fully functional prototype deployed on an internal machine for **50 internal users**

Computational Data Science Projects MSc Coursework

- **Regression and Model Selection:** Implemented linear regression models with L1 and L2 regularization; performed hyperparameter tuning via grid search and evaluated model performance under different regularization regimes
- **Physiological Signal Analysis:** Applied Gaussian Mixture Models to relate physiological signals (e.g. heart rate, blood pressure) to emotional states; explored unsupervised clustering and probabilistic interpretation of latent components

Applied AI Intern Oct 2022 – Mar 2023
Avanade

- Participated in an internal internship program focused on end-to-end deployment of computer vision models
- Trained and deployed a classification model supplied via Azure ML to edge devices using Azure agents
- Gained hands-on exposure to cloud-based ML workflows and production constraints

Master's Thesis - Research Experience 2025

- Conducted computational research on the effect of noise on Gibbs states prepared by shallow local quantum circuits
- Implemented tensor-network simulations in Python (Quimb) for systems up to 8 qubits
- Formulated an original conjecture relating depolarizing noise to thermal state structure

Home Lab

- Designed and maintained a self-hosted Raspberry Pi environment using Linux, Docker, and systemd
- Deployed services including Pi-hole, Grafana, and Nextcloud behind an Nginx reverse proxy
- Configured HTTPS via Certbot and debugged DNS failures affecting network connectivity