

# Pedro Miguel Domingos Marques

## SOFTWARE DEVELOPER

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### PROFILE

Full-stack Software Developer with experience shipping production systems across low-latency systems programming, mobile applications, and ML services. Comfortable across the stack — from Rust and Go backend engineering to React Native mobile development to Python data services — with strong emphasis on testing discipline, clean architecture, and CI/CD pipelines.

### PROJECTS

#### RushTalk — Low-Latency Voice Communication Platform

[github.com/Pedrom2002/rushtalk](https://github.com/Pedrom2002/rushtalk) ↗

Production-grade Discord-style desktop client with a custom Rust audio engine achieving **sub-60ms mouth-to-ear latency**. Spans 12,000+ LOC across Rust, Go, TypeScript, and SQL.

- ▶ **Zero-allocation Rust audio pipeline:** noise suppression, AGC, VAD, Opus codec, EMA-adaptive jitter buffer, packet loss concealment, lock-free SPSC ring buffers.
- ▶ **Go backend with Clean Architecture:** 41 REST endpoints, WebSocket hub, 64-bit bitmask permissions, JWT RS256 auth, PostgreSQL + Redis.
- ▶ Tauri 2.0 desktop client (~50 MB footprint vs Electron's ~300 MB) with Svelte 5 frontend; Kubernetes deployment with HPA, cert-manager TLS, and Prometheus monitoring.

Rust · Go · Svelte 5 · TypeScript · Tauri 2.0 · LiveKit (WebRTC) · PostgreSQL · Redis · Docker · Kubernetes

#### Duelt — AI-Powered Household Task Management Mobile App

[github.com/duelit-showcase](https://github.com/duelit-showcase) ↗

Solo full-stack mobile app helping couples manage shared household responsibilities. End-to-end ownership from architecture through backend, AI, testing, and CI/CD.

- ▶ Real-time couple sync via Firestore listeners with **offline-first mutation queue** (MMKV-backed) and conflict resolution.
- ▶ **Gemini 2.5 Flash** chat assistant with Zod-validated, template-constrained outputs; end-to-end encryption (Argon2id + AES); GDPR-compliant.
- ▶ **2,300+ tests** across 122 suites, 10 Maestro E2E flows, 5-job CI/CD pipeline with EAS Build.

React Native · Expo · TypeScript · Firebase · Gemini AI · Zustand · TanStack Query · Jest · Maestro

#### Energy Forecast PT — Production ML System for Portuguese Energy Grid

[github.com/energy-forecast-pt](https://github.com/energy-forecast-pt) ↗

Hourly electricity consumption forecasting across 5 Portuguese regions using gradient-boosted trees, with a fully reproducible end-to-end training pipeline.

- ▶ Achieved **MAPE 4.33% / RMSE 81 MW** on held-out test set across 175k+ hourly samples; **90.7% RMSE improvement** over Moving Average baseline.
- ▶ Production FastAPI service with batch predictions, SHAP explanations, conformal prediction intervals, drift detection, and model hot-reload.
- ▶ **649 tests, 85%+ coverage;** CI/CD with pytest/ruff/bandit/Trivy; multi-cloud deployment to AWS ECS, Azure Container Apps, and GCP Cloud Run.

Python · CatBoost · XGBoost · LightGBM · Optuna · FastAPI · Docker · DVC · GitHub Actions · Prometheus

### TECHNICAL SKILLS

#### LANGUAGES

Python, TypeScript, JavaScript, SQL, C#, Rust, Go

#### ML & DATA SCIENCE

Scikit-learn, XGBoost, CatBoost, LightGBM, Optuna, Pandas, NumPy, SHAP, Conformal Prediction, Feature Engineering, Time-Series Forecasting

#### BACKEND & APIS

FastAPI, Flask, REST, WebSockets, PostgreSQL, Redis

#### FRONTEND & MOBILE

React, React Native, Next.js, Expo, Tailwind CSS

#### MLOPS & DEVOPS

Docker, Kubernetes, GitHub Actions, DVC, Pytest, Pre-commit hooks

#### CLOUD

AWS ECS, Azure Container Apps, GCP Cloud Run

#### TOOLS & VIZ

Git, Linux, Jupyter, Tableau, Matplotlib, Seaborn, Streamlit

### EXPERIENCE

#### Software Development Intern

Apr 2026 — Aug 2026

QUIC Portugal · Lisbon

Developing internal automation tools and custom software solutions to streamline workflows for the company's audiovisual event productions.

#### Store Assistant — Pingo Doce

Sep — Dec 2023

Processed 200+ daily transactions; cross-departmental customer service.

#### Customer Service — H3

Oct 2021 — Apr 2022

Managed stock control for 150+ SKUs and onboarded new staff.

### CERTIFICATIONS

- ♦ **Data Science Professional Certificate** — IBM · Coursera
- ♦ **Advanced Data Analytics Professional Certificate** — Google · Coursera
- ♦ **AI Engineering Professional Certificate** — IBM · Coursera
- ♦ **Advanced Statistics for Data Science** — Johns Hopkins · Coursera
- ♦ **Data Visualization with Tableau** — UC Davis · Coursera

### EDUCATION

#### CTeSP in Mobile Devices Development

2024 — 2026

ISTEC Lisboa · Portugal

EQF Level 5 — Higher Professional Technical Course. Progressing to a Bachelor's degree in Computer Engineering (post-laboral schedule, expected 2028).

#### BSc Clinical Physiology (attendance) — ESTeSL

2022

**Languages:** Portuguese (Native) · English (C1) · Spanish (B1)