

Carlos Miguel Fernando

Senior Software Engineer | Search & AI

CONTACTS

Email: cmiguel@icloud.com
Lisbon, Portugal

Website: cmiguel.com
GitHub: github.com/bytethis
LinkedIn: linkedin.com/in/cmiguel

SKILLS

MAIN TECHNOLOGIES

Python
FastAPI
LangGraph
OpenSearch
AWS
React

OTHER

AI & Search

- LangChain
- LLMs (Bedrock, Claude)
- Agents / Tool Use / MCP
- RAG / Citation Grounding
- Vector Search / Embeddings
- vLLM / Local Models
- NLP / NER (spaCy)
- Relevance / Ranking
- scikit-learn
- Langfuse
- TensorFlow / OpenCV

Databases

- PostgreSQL
- Redis
- MongoDB / DynamoDB

Frameworks

- Flask / Django
- Next.js

Other

- Kafka / RabbitMQ
- Spark / Delta Lake
- Docker
- C, C++, C#, Java
- GitHub Actions
- Grafana
- Microcontrollers

ABOUT ME

I design complex systems and build them end to end, from infrastructure to frontend, and lately from large-scale data acquisition and pipelines to conversational AI.

Fourteen years in, across healthcare, music, finance and retail, I've been the sole engineer at early-stage startups, the founding hire of an international office, and the architect and technical owner of a production AI system at enterprise scale.

These days my focus is applied AI in healthcare: agentic systems, NLP and search. Outside of work I'm a natural extrovert who loves meaningful conversation, good books, photography and freshly brewed coffee.

EXPERIENCE

Veeva Systems | SOFTWARE ENGINEER, SEARCH & AI June 2024 - Present (2yr, 3mo) | Portugal (Remote)

Part of the Search & AI team behind the Veeva Link product family, a suite of data-driven applications for life sciences built on data covering over 50M healthcare professional (HCP) profiles.

Conversational AI: Built the conversational AI assistant for the Link product family, one of the company's key AI initiatives, owning it end to end across concept, architecture, backend and frontend. Work spanned agent orchestration, retrieval with citation grounding, entity resolution, streaming, evaluation tooling and cost optimization, under the data access constraints of a regulated industry. Retain architectural ownership as the team has grown, setting technical direction and onboarding new engineers onto it. Regular interviewer for engineering hires, including engineers now on this team.

Search and NLP: Designed and implemented a Named Entity Recognition service and its data pipeline, with multi-language support including CJK, resolving against over 20M entities in under 15ms, backed by vector search for semantic disambiguation across medical ontologies of roughly 50k entries in under 3ms. Owned search relevance, scoring, ranking and query understanding on OpenSearch across an index of over 50M profiles, serving more than 200k searches a month, and improved a Python-based autocomplete service. Improved the search engine behind Link Key Accounts, the healthcare organization (HCO) data product, and guided the team through implementation.

Summarization and Insights: Took Link Medical Insights, used by pharma Medical Science Liaison teams to capture and analyze field insights, from proof of concept to production scale; now a fully fledged product with a dedicated team. Paired lightweight local classification and clustering with local vLLM or cloud-hosted models to surface key points at low per-insight cost. Built and scaled the summarization system behind Link Key People, generating executive, recency and digital profile summaries for over 5M profiles, on demand and through an overnight Spark and Bedrock batch job engineered for low regeneration cost.

Data and Platform: Built analytics, metrics, alerting and observability for several Link products. Ran a deep exploratory analysis of one product's usage data, giving the organization visibility into how the product was actually being used; the findings reached senior leadership and fed into prioritization decisions.

Technologies: Python, FastAPI, LangGraph, LangChain, AWS Bedrock, vLLM, OpenSearch, spaCy, scikit-learn, Spark, Delta Lake, PostgreSQL, Redis, AWS, Docker, Grafana

HARD SKILLS

System Design
Architecture
Scalability
Microservices
Agentic AI Systems
NLP & Search
Technical Leadership

SOFT SKILLS

Leadership
Communication
Public speaking
Critical thinking
Problem-solving

CERTIFICATIONS

Professional Scrum Master™ I

LANGUAGES

Portuguese (Native)
English (Native/Bilingual)
Spanish (Professional)
German (A1.1)

EXPERIENCE (CONT.)

Viz.ai | SENIOR SOFTWARE ENGINEER & TECH LEAD

June 2021 - May 2024 (3yr) | San Francisco, CA (Remote)

June 2021	Full Stack Engineer (8mo)
February 2022	Full Stack Engineer & Tech Lead (5mo)
July 2022	Senior Software Engineer & Tech Lead (1yr, 11mo)

First hire of the Portugal office, growing from Full Stack Engineer to Senior Engineer & Tech Lead while helping scale the local team to 35 people.

Development: Led the architectural design and delivery of a new Authorization service and a client-facing user administration platform, taking both from concept to production. Contributed features across existing platforms and legacy services, spanning user management, analytics, authentication and data retention.

Microservices Transition: Delivered the first service extractions from the original monolith, documenting the migration into a repeatable process that the wider engineering organization used for a decomposition into roughly 30 services.

Localization: Led the implementation of localization infrastructure, enabling expansion into the EMEA region with support for 8 languages.

Security and Compliance: Worked closely with the Operational Security team to identify and remediate system vulnerabilities, driving platform hardening to an A+ rating on SSL Labs.

Leadership: Temporarily assumed the Engineering Manager role following the previous manager's departure, leading a cross-functional team of 9 while the company recruited a replacement. Interviewed extensively as the office grew, advocated for engineering best practices, authored extensive technical documentation, and worked with the Architecture team on technology adoption and long-term planning.

Technologies: Python, JavaScript, PostgreSQL, Flask, DynamoDB, React, Kafka, RabbitMQ, Django, Redis, GitHub Actions, AWS, Docker, Datadog, Coralogix

Reckon.ai | FULL STACK ENGINEER & TECH LEAD

November 2018 - June 2021 (2yr, 8mo) | Porto, Portugal

November 2018	Full Stack Engineer (1yr, 2mo)
January 2020	Full Stack Engineer & Tech Lead (1yr, 6mo)

Joined as the sole engineer alongside the founders, owning the full technical stack across computer vision, hardware integration and web platforms.

BuyBye Project: Spearheaded the R&D, implementation and assembly of an automated micromarket cabinet similar to Amazon Go, achieving checkout in under 3 seconds using computer vision to identify products selected by customers.

Developed in partnership with Jerónimo Martins and showcased internationally, including OutSystems NextStep Amsterdam 2019. Led integration of microcontrollers (Arduino & Raspberry Pi), sensors, cameras and network interfacing, and architected modular, distributed microservices to enable mass production. Built a full web platform for cabinet control, stock management, metrics, reporting and consumer insights. Still live and operating at NOVA University of Lisbon.

Pricing Platforms: Built platforms aggregating and visualizing market prices across sectors (groceries, electronics) for price comparison and competitor analysis, integrating print leaflets and online sources with custom reporting. Responsible for full-stack development and custom scraping software for real-time data acquisition.

Additional Contributions: R&D with microcontrollers, cameras, sensors, PCB design and board assembly. Produced technical schematics. Regular client-facing demos, pitches and stakeholder meetings.

Technologies: Python, Node.js, Docker, JavaScript, MongoDB, PostgreSQL, TensorFlow, Microcontrollers (Arduino, ESP), Bash, OpenCV

VOLUNTEERING

The Skeeter Project

VP of Technology | March 2025 - Present

US-based 501(c)(3) nonprofit promoting mental health literacy through the game of golf. Own all technology for the organization: website, online store and digital infrastructure.

EXPERIENCE (CONT.)

Creighton AI | FULL STACK DEVELOPER (CONTRACT)

June 2018 - November 2018 (6mo) | Porto, Portugal (remote)

Financial Analysis Platform: As sole engineer, engineered a distributed scraping system on AWS to aggregate financial data from several targeted markets. Built custom Lambda functions running Chromium and Selenium within Lambda's resource constraints, interfacing with an AWS RDS MSSQL database.

Technologies: AWS (Lambda, RDS), Python, Docker, Selenium, Chromium

Liderteam - Business Solutions | SOFTWARE DEVELOPER

October 2017 - May 2018 (8mo) | Porto, Portugal

Operational Control Systems: As the sole engineer, built web platforms and mobile applications for Operational Control Systems serving large industrial clients including Mecwide and Sulimet, covering operations, production, scheduling, payroll, invoicing and inventory management, some integrating with PDA systems and on-site industrial equipment. Orchestrated deployments across multiple sites in Europe and Africa, with deep client interaction for requirement gathering and project planning.

Technologies: Microsoft stack (.NET Framework, C#, HTML5, MVC), JavaScript, jQuery, Bootstrap

Sonoro Media | JUNIOR FULL STACK DEVELOPER

May 2015 - October 2017 (2yr, 6mo) | Porto, Portugal

Music Streaming Software: Developed features for a Node.js music streaming platform for commercial spaces, deployed across major Portuguese retailers including all Sonae and Pingo Doce stores. Automated maintenance across a network of over 2000 devices, established network infrastructure for secure remote access, and conducted R&D on Linux sound drivers across varying hardware.

Technologies: Node.js, Python, MySQL, JavaScript, HTML5, CSS3, jQuery, SaltStack, Puppet, Shell Scripting, SSH

Centro Hospitalar São João | NETWORK & SYSTEMS SECURITY / SOFTWARE DEVELOPER

April 2012 - August 2016 (4yr, 5mo) | Porto, Portugal

April 2012 Security & Network Administration Intern (1yr)

April 2013 Software Developer, Part-time (3yr, 5mo)

Self-arranged internship that continued part-time under the university's student-worker programme, alongside studies and, from 2015, alongside full-time work.

Security and Development: System Security Analysis and Network Administration, later Software Development, Data Mining and Automation, including front-end interfaces for various hospital systems.

Technologies: Java, Python, HTML5, CSS3, JavaScript, jQuery, Metasploit Framework

COURSES

University of Messina, Sicily

August 2017

Arduino Technology as the enabler of Cyber Physical Systems. Interfacing, configuring and programming of embedded systems.

University of Liège, Belgium

July 2018

The Cyborg of Tomorrow, Biomechanical Engineering. Biomechanics, human movement modeling, tissue engineering and medical imaging.

EDUCATION

FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO

Computer Networks and Systems Engineering

September 2017 - June 2018 | Master's Degree (incomplete)

Focus on Deep Learning, Computer Vision, Data Mining, Cryptography. Thesis: Using Deep Learning to Identify Modern Art

FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO

Computer Science

September 2010 - September 2017 | Bachelor's Degree

Augmented Reality Magic: The Gathering game using OpenCV. Android VR Museum Experience developed with Unity.

PROJECTS

Nexo | PERSONAL

April 2026 - Present | nexonoticias.pt

Public map-based news aggregator for Portugal. Applies geographical clustering with NLP and LLM techniques to deduplicate, merge and classify articles from multiple sources into a georeferenced map.

Technologies: Python, NLP, LLMs, Geospatial Clustering, PostgreSQL

Prospective Surgery Database Platform | INDEPENDENT

September 2018

Built with a group of surgeons: surgery and post-surgery record-keeping for major health specialties, supporting data analysis and patient monitoring.

Technologies: Node.js, Pug.js (Jade), Express.js, MongoDB

Using Deep Learning to Identify Modern Art | ACADEMIC, THESIS

May 2018

Convolutional Neural Network based painting style identification for modern art. Style trait identification for proto-image generation, style transfer and new image generation.

Technologies: Python, TensorFlow, Deep Learning, Data Mining

PATENTS

Storage Cabinet, Methods and Uses Thereof | US 2025/0218237 A1

Filed March 2022 | Pending | patents.google.com/patent/US20250218237A1

Automated retail cabinet identifying products on removal, combining shelf cameras, weight sensors and a machine learning computer vision model. Deployed as BuyBye at Reckon.ai.