

Santiago Calderón

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I am an engineer with a robust background in AI, software engineering, and solution architecture. Fluent in Spanish (native) and proficient in English, I bring a multilingual advantage to global projects. My expertise spans the development and deployment of machine learning models and the creation of Generative AI (GenAI) solutions using large language models (LLMs). I am passionate about research and have contributed to white papers during my time collaborating as a Research Assistant, a process I find deeply rewarding and stimulating. My enthusiasm for innovation makes me adept at architecting scalable, cutting-edge solutions that drive real-world impact.

WORK EXPERIENCE

Software Engineer

Dec 2022 — Present

Quorum Software (US-based company creating software products for the Oil and Gas industry)

Bogotá, Colombia, later relocated to London, United Kingdom (Hybrid position)

- Architected and developed a generative AI application integrating Azure AI Search and OpenAI (GPT-4) for Retrieval Augmented Generation (RAG). This application enabled unified large language model (LLM) APIs, impacting global teams in Norway, South Africa, and the U.S.
- Led the design, training, and deployment of scalable machine learning solutions using Azure Machine Learning, implementing best practices in model training, cost optimization, and operational efficiencies.
- Led a document classification project using supervised learning on extensive datasets, with comparative analyses between traditional NLP methods and fine-tuned BERT-like models. Utilized SHAP for explainability, ensuring transparency and trust in model predictions.
- Developed RESTful APIs with Clean Architecture in .NET, interfacing with AWS services for seamless document management, enhancing productivity and user experience across teams.

Junior Software Developer

Mar 2022 — Oct 2022

Kin + Carta (IT consulting company headquartered in the UK, with a significant presence in the USA)

Bogotá, Colombia (Remote position)

- Leveraged Google Cloud Platform (GCP) services to deploy Java RESTful APIs, enhancing various internal processes.
- Developed an internal RESTful API in Java Spring Boot, serving a React frontend, significantly reducing times of employee onboarding.
- Partnered with a colleague to implement RESTful APIs using Node.js and Puppeteer.js, significantly improving company processes.

Research Assistant

Sep 2023 — Present

King's College London

London, United Kingdom

- Conducted research in Explainable AI (XAI), contributing to peer-reviewed white papers submitted to leading AI conferences.
- Implemented and optimized XAI algorithms for computer vision tasks, focusing on real-time, causality-based techniques (ReX and IncX), employing PyTorch and ONNX, and automating workflows with GitHub Actions.
- Regularly collaborated on deep-dive sessions to enhance research methodology and align developments with cutting-edge AI trends.

Teaching Assistant

Aug 2020 — Jun 2021

Universidad Militar Nueva Granada

Bogotá, Colombia

- Utilized \LaTeX to contribute to the development of a control theory textbook.
- Assisted in the module on models of mechatronic systems (2020-II, 2021-I), providing tutorials and support to small groups of students.

TECHNICAL SKILLS:

- **Machine Learning Data Science:** PyTorch, TensorFlow, Keras, Scikit-Learn, NumPy, Pandas, SpaCy
- **Cloud Platforms:**
 - **Azure:** Azure ML, AI Services, Blob Storage, SQL Database, Serverless, Event Grid, Active Directory
 - **AWS:** RDS, Lambda, SNS, SQS
 - **GCP:** Cloud Run, SQL, Spanner, Firestore, Compute Engine
- **DevOps Containerization:** Docker, Kubernetes
- **Version Control:** Git, GitHub
- **Backend Development:** .NET (C#), Python (FastAPI), Java (Spring)
- **Testing:** JUnit, Mockito, pytest
- **Databases:** SQL Server, MySQL, Azure Cosmos DB
- **Research Documentation:** LaTeX, Mendeley

EDUCATION

MSc in Advanced Computing / Computer Science, *King's College London*
London, United Kingdom

Sep 2023 — Jan 2025

- Predicted: Distinction (Highest honor in a UK master's degree)
- Ranked 4th for the Colfuturo scholarship, placing in the top 0.5% of 779 candidates.

BSc in Mechatronics Engineering, *Universidad Militar Nueva Granada*
Bogotá, Colombia

Jan 2017 — Apr 2022

- Cum Laude for highest GPA, University Medal for exceptional academic performance.
- "Tesis Laureada" for a final thesis grade of 5.0/5.0 and significant research contributions.
- Awarded full-tuition scholarship for outstanding academic achievement.

Software Development Technical Program, *Servicio Nacional de Aprendizaje (SENA)*
Bogotá, Colombia

Jan 2015 — Dec 2016

- Developed a C# desktop application with SQL Server to automate business processes.

PUBLICATIONS

Real-Time Incremental Explanations for Object Detectors

Calderón-Peña S., Chockler H., Kelly D. A.

[arXiv Preprint](#)

Black-Box Explainability for Image Classifiers in a Medical Setting

Blake N., Kelly D. A., Chockler H., Calderón-Peña S., Chanchal A.

[arXiv Preprint](#)

CERTIFICATIONS

Microsoft Certified DP-100: Azure Data Scientist Associate, *Microsoft*

Credential id: [E0BEA56FD07E8AB7](#)

Microsoft Certified AI-102: Azure AI Engineer Associate, *Microsoft*

Credential id: [E5960BE874975467](#)

Google Cloud Certified - Associate Cloud Engineer, *Google Cloud*

Credential id: [63393547](#)

LANGUAGES

- **English** : TOEFL (110 / 120) ~ C2
- **Spanish** : Native speaker
- **French** : DELF B2 certificate
- **German** : B1

VOLUNTEERING

Web Dev Student Lead

Sep 2023 — Mar 2024

Google Developer Students Club - King's College London

- Conducted a workshop on MLOps in Google Cloud, focusing on using Vertex AI to automatically train and deploy a neural network for digit recognition using the MNIST dataset.
- Led a workshop on using the Vertex AI APIs for various industry applications, including text-to-speech, speech-to-text, and face recognition.
- Presented a workshop on developing APIs with Flask for natural language processing (NLP) tasks such as lemmatization and named entity recognition using spaCy.

Computer Skills Education Volunteer

Jul 2022 — Jun 2023

Fundación Laudes Infantis

- Taught basic robotics to children, instructing dozens of individuals in low-income areas of Bogotá.
- Provided foundational education in JavaScript and HTML to adolescents and adults in Bogotá, enabling young entrepreneurs to create their own business websites.