Pedro Reichow

Fullstack Developer - Data Engineer | Python | TypeScript | TDD | DevOps

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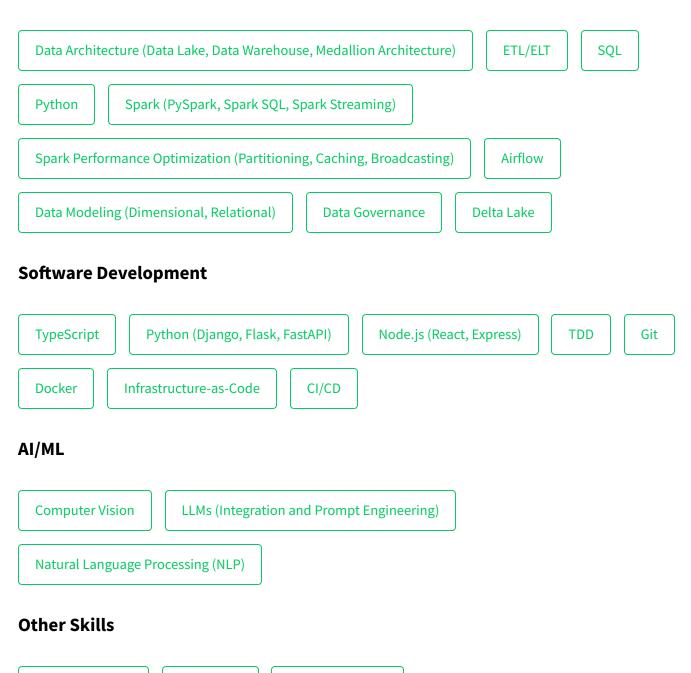
www.pedro-reichow.dev

Introduction

I am a Data Engineer with over 5 years of experience designing, building, and managing scalable and resilient data pipelines. I apply my knowledge of modern data architectures, including data lakes and data warehouses, using cloud technologies such as AWS (S3, Redshift, Glue, Lambda, DynamoDB, etc.) and frameworks like Apache Spark and Apache Airflow. I have expertise in ETL, data modeling, data governance, and performance optimization. My background also includes developing AI and Machine Learning-based solutions, with experience in Python, SQL, and TypeScript. I seek to apply my skills to solve complex data challenges and contribute to innovative projects.

Skills

Data Engineering

AWS (S3, Glue, Athena, Redshift, EMR, Lambda, DynamoDB, Kinesis, IAM, CloudFormation)

- Data Architecture (Data Lake, Data Warehouse, Medallion Architecture)
- ETL/ELT
- SQL
- Python
- Spark (PySpark, Spark SQL, Spark Streaming)
- Spark Performance Optimization (Partitioning, Caching, Broadcasting)
- Airflow
- Data Modeling (Dimensional, Relational)
- Data Governance
- Delta Lake

Software Development

- TypeScript
- Python (Django, Flask, FastAPI)
- Node.js (React, Express)
- TDD
- Git
- Docker
- Infrastructure-as-Code
- CI/CD

AI/ML

- Computer Vision
- LLMs (Integration and Prompt Engineering)
- Natural Language Processing (NLP)

Other Skills

- Communication
- Teamwork
- Problem Solving

Experience

Trinnix AI Lab

AI and Computer Vision Engineer (Feb 2024 - Nov 2024)

Leading the development of AI solutions, focusing on computer vision and integration with LLMs.

- Developed scalable platforms in TypeScript, tRPC, and Node.js, integrating computer vision models for agricultural map analysis. The models, trained with YoloX and Roboflow, achieved an accuracy of +95% in identifying plant diseases and pests, as well as counting and identifying cattle behavior.

- Built ontological knowledge graphs using Neo4j, enabling complex analysis and business insights.

- Integrated LLMs (Gemini 1.5 pro, Claude 3.5 sonnet, Ollama 3, gpt-4o) through APIs, utilizing advanced prompt engineering techniques to ingest data from documents based on the ontology, generate automated reports from the insights, and issue alerts.

- Managed the project's relational database with Prisma ORM.

Technical Skills & Tools:

- Languages & Technologies: TypeScript, tRPC, Prisma ORM, GraphQL, Graph Databases

- AI/ML: LLMs, Prompt Engineering, Computer Vision Models

- Domain Expertise: Scalable platform design, knowledge graphs, geospatial analysis

Simulated Reality

Full Stack Engineer (Feb 2023 - Feb 2024)

Developed software solutions for Virtual Reality (VR) applications in training, gaming, and healthcare, focusing on performance, scalability, and security.

- Developed VR solutions in Node.js and React for training and wellness, implementing features such as [mention example features, e.g., interaction with 3D objects, physics simulations].

- Built scalable APIs with Node.js and Express, using queues for asynchronous task processing and pub/sub for real-time communication between system components. The use of queues enabled the processing of large 3D video files and updates of games compiled in Unity and Unreal.

- Implemented unit and integration tests with Jest, ensuring software quality and reliability.

- Created data visualization dashboards with Chart.js, integrated with a CRM system to track user progress in training, headset usage insights, and more.

- Implemented a robust and scalable infrastructure in Azure App Service and Blob Storage, using CI/CD (GitOps) practices to automate the deployment process and ensure environment stability.

- Ensured compliance with US healthcare industry security and privacy standards (FedRAMP and HIPAA), implementing a deployment protocol with Red Hat OpenShift containers.

Technical Skills & Tools:

- Technologies: Node.js, Express, React, Jest, Chart.js, Redis, RabbitMQ

- Infrastructure: Azure App Service and Blob Storage, Red Hat OpenShift, CI/CD (GitOps)

- Compliance: FedRAMP, HIPAA

- Architecture: Microservices, Queues, Pub/Sub

QI Tech

Full Stack Engineer (March 2022 - Feb 2023)

Developed a scalable and secure banking-as-a-service platform using microservices in Python and Google Cloud Platform (GCP) technologies.

- Developed scalable microservice APIs in Python with Flask and FastAPI, using the gRPC framework for inter-service communication. These APIs processed an average of 100,000 requests per day with an average latency of 150 ms.

- Implemented data pipelines using PySpark on Google Cloud Dataproc, processing over 500GB of daily financial transactions. Optimized Spark jobs through proper partitioning strategies and broadcast joins, reducing processing time by 40%.

- Built real-time streaming pipelines with Spark Structured Streaming to process live transaction data, implementing windowed aggregations and watermarking to handle late-arriving data.

- Developed Delta Lake tables on GCS with PySpark, implementing ACID transactions and time travel capabilities for data quality and audit purposes.

- Implemented data pipelines in Python, using Apache Beam and the Google Cloud Dataflow service for distributed and large-scale processing. The pipelines processed

countless GB of data daily, from tax documents, credit agreements, and images for security identification services.

- Orchestrated data pipelines with Apache Airflow, deployed on Google Cloud Composer, scheduling and monitoring workflow execution.

- Used Google Cloud Pub/Sub to implement asynchronous and decoupled communication between microservices, ensuring system scalability and resilience.

- Stored processed data in a Data Lake on Google Cloud Storage (GCS), optimized for analytical queries with Google Cloud BigQuery.

- Implemented unit and integration tests (TDD) with pytest, ensuring code quality and API reliability.

Technical Skills & Tools:

- Languages: Python, SQL, JavaScript, TypeScript

- Frameworks: Flask, FastAPI, gRPC, React, NextJS, Apache Beam, Apache Airflow

- Big Data: PySpark, Spark SQL, Spark Streaming, Delta Lake

- GCP: Dataproc, Dataflow, Pub/Sub, GCS, BigQuery, Composer, Monitoring, Logging, Terraform

- Testing: pytest (unit and integration)

- Architecture: Microservices, Event-Driven Architecture

- Methodologies: TDD, Agile

PecSmart

Backend Developer Intern (December 2021 - February 2022)

Backend development for a cattle monitoring system on embedded devices (Raspberry Pi), using Python and sensor integration.

- Developed RESTful APIs in Python with Django and Django REST Framework (DRF) to collect and manage sensor data. The APIs processed data from X sensors, transmitting information every Y minutes/seconds.

- Implemented the sensor data collection logic on Raspberry Pi devices using BalenaCLI, integrating with DRF. The collected data included silo volume, microphone audio, and camera images.

- Built a data processing pipeline in Python to receive, process, and feed the RDS database where the ML models would consume it.

- Created Bash automation scripts to back up data and update software on Raspberry Pi devices.

- Developed front-end interfaces with Vue.js for real-time visualization of sensor data, allowing livestock farmers to monitor their swine herds. The interfaces displayed information such as health indicators in pig pens, volume with loading and unloading in silos, and translation of volume to kg/ton.

- Used BalenaCLI to manage and deploy software on Raspberry Pi devices, facilitating system updates and maintenance in the field.

Technical Skills & Tools:

- Backend: Python, Django, Django REST Framework (DRF)

- Frontend: Vue.js

- IoT: Raspberry Pi, BalenaCLI

- Database: RDS, DynamoDB

- Tools: Bash Scripts, Git

Fontes Promotora

Backend Developer (May 2021 - October 2021)

Specialized in developing complex backend solutions using Python and JavaScript, focusing on web scraping, automation, and data processing. Led the development of comprehensive API solutions while maintaining high standards of code quality and system efficiency.

- Developed web scraping solutions using Scrapy and Requests

- Built and maintained APIs using FastAPI, Flask, and Django Rest Framework

- Managed databases using MongoDB and PostgreSQL

- Implemented data processing pipelines with Pandas

- Created frontend interfaces using ReactJS

- Deployed and maintained applications using Docker and AWS

- Automated project management workflows with Smartsheets

Technical Skills & Tools:

- Backend: Python, FastAPI, Flask, Django

- Databases: MongoDB, PostgreSQL

- Frontend: ReactJS

- Tools: Docker, AWS, Smartsheets

Intelbras

Product Developer (November 2020 - May 2021)

Member of the analog camera development team, responsible for technical documentation, testing procedures, and product validation. Participated in negotiations with international suppliers and managed critical aspects of electronic product development from concept to market launch.

- Created technical documentation for analog camera systems

- Executed product testing and validation procedures

- Conducted negotiations with international suppliers

- Designed and built electronic product prototypes

- Conducted feasibility studies and failure mode analysis

- Managed product certification processes

- Collaborated with cross-functional teams for product development

Technical Skills & Tools:

- Hardware: Analog camera systems, Electronic prototyping

- Processes: Product certification, Quality control

- Management: Supplier relations, Cross-functional collaboration

- Analysis: Feasibility studies, Failure mode analysis

Hostgator.com

IT Technical Support (September 2018 - August 2019)

My first foray into the world of technology was a truly insightful experience. As a member of a technical support team, I gained hands-on experience assisting clients with their technical inquiries and issues. This direct engagement with users allowed me to quickly acquire foundational knowledge in HTML, CSS, PHP, and WordPress. I also became proficient in essential web hosting tools like Cpanel and WHMCS. My role in web hosting support highlighted the critical role of technology in enabling small businesses to establish their online presence and assisting large enterprises in maintaining their online performance and reliability (with zero downtime). This role emphasized the transformative impact that technology can have for businesses of varying scales.

- Assisted clients with technical issues and inquiries

- Acquired foundational knowledge in HTML, CSS, PHP, and WordPress

- Became proficient in Cpanel and WHMCS

- Supported small businesses in establishing their online presence

- Maintained online performance and reliability for large enterprises

Technical Skills & Tools:

- Web Technologies: HTML, CSS, PHP, WordPress

- Hosting Tools: Cpanel, WHMCS

- Customer Support: Technical troubleshooting, User engagement

Education

- **Estácio** - Systems Analysis and Development (2021 - 2023)

- **UFSC** - Electrical Engineering (2017 - 2023)

- **IFSC** - Technical High School in Electrotechnics (2012 - 2016)