

JULIÁN ANDRÉS MONTOYA CARVAJAL

Backend Software Developer

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Professional Profile

I am a software developer with over 3 years of experience in designing and implementing technology solutions focused on backend development. My experience spans both academic and corporate sectors, where I have built robust systems, ranging from efficient REST APIs to advanced AI and machine learning algorithms.

I excel in designing relational and non-relational databases, optimizing information management, and ensuring application scalability. I have worked on projects integrating AWS cloud services, achieving agile and effective implementations. My accomplishments include the development of web applications and machine learning algorithms for Natural Language Processing (NLP), standing out in challenges such as the Bancolombia Datathon 2022.

I have a strong commitment to continuous learning and innovation. Additionally, I apply agile methodologies like Scrum to ensure efficient project management. My professional goals include contributing to backend solutions that transform processes and generate value.

Work Experience

Software Developer - *Corporación Interuniversitaria de Servicios (CIS)*

October 2022 – December 2024

Responsibilities:

- Lead the gathering of functional and non-functional requirements, ensuring solutions meet the administrative needs of the academic programming area.
- Design and model relational databases in PostgreSQL, optimizing SQL queries to support key processes such as reporting and academic scheduling.
- Document user stories and develop a scalable and secure REST API with FastAPI, integrating notification services and dynamic report generation.
- Develop a modular REST API for administrative processes and deploy it in the cloud.

Achievements:

- ✓ Reduced database query times by optimizing SQL queries and designing a robust relational database in PostgreSQL, enabling high-volume operations with optimal performance.
- ✓ Increased system modularity by 70%, improving maintenance, security, and scalability by implementing a three-layer architecture in the REST API development with FastAPI.
- ✓ Automated the generation of dynamic reports in PDF and Word formats, reducing report creation time by 80% through dedicated API services for course management.
- ✓ Successfully deployed the system on AWS using Docker and GitHub, implementing a continuous deployment approach with horizontal scalability.

AI Algorithm Developer - *University of Antioquia*

March 2022 – October 2022

Responsibilities:

- Integrate and consume APIs from social networks like Google, YouTube, and Twitter.
- Design, implement, and maintain ETL data pipelines to integrate data from multiple sources into centralized data warehouses.
- Supervise data quality and develop validation strategies to identify and correct discrepancies.
- Design and develop AI and Machine Learning algorithms for data classification and feature extraction.
- Apply advanced NLP techniques, such as sentiment analysis and topic detection.
- Collaborate with researchers and data scientists for data analysis and processing.

Achievements:

- ✓ Automated data extraction from social networks, reducing data collection time by 80% by developing a scraping system and API consumption for Google, YouTube, and Twitter.
- ✓ Improved data classification accuracy by 90% by implementing Machine Learning models and NLP techniques for feature extraction.

- ✓ Documented processes and operational manuals for data pipelines.

Programming Assistant - University of Antioquia

October 2021 – March 2022

Responsibilities:

- Provide backend support in PHP for various processes within the Faculty of Engineering at the University of Antioquia.
- Collaborate in maintaining, improving, and troubleshooting existing systems, ensuring their proper operation and performance optimization.
- Participate in the migration of programs to newer PHP versions, ensuring compatibility and leveraging updated language features.

Key Achievements & Projects

Bancolombia Datathon 2022 - Top 20 Finalist

Challenge: Data analysis using AI and Natural Language Processing (NLP) algorithms to develop an intelligent content recommendation system.

Web Application Development for the Faculty of Exact Sciences at the University of Antioquia

Contributed to backend development of the SIGA application (*Administrative Management System for the Faculty of Exact and Natural Sciences*) using Node.js and the Express framework.

Technical Skills

- **Programming Languages:** Python, PHP, Nodejs
- **Databases:** MySQL (relational), PostgreSQL (relational), MongoDB (NoSQL), DynamoDB (NoSQL)
- **Version Control System:** Git y GitHub
- **Data Processing & Analysis:** PySpark, Pandas, Numpy
- **Frontend Development:** HTML, CSS, JavaScript, Bootstrap
- **Cloud Services:** AWS (EC2, S3, Lambda), GCP, DigitalOcean
- **Containers & Orchestration:** Docker
- **API Development:** FastAPI, Flask, Django, Express
- **Unit Testing:** Pytest
- **Agile Methodologies:** Scrum, Kanban
- **Machine Learning & AI:** NLP, Embeddings, Regression, Classification, Topic Modeling

Education

Physics (9th Semester)

University of Antioquia

2014 – Present

Technologist in Accounting and Finance

SENA

2013

Power Skills

Teamwork – Problem Solving – Critical Thinking – Adaptability – Effective Communication – Time Management

Hobbies

Trekking – Reading – Soccer – Dancing – Movies & Series – Trying New Restaurants