

Allan Bolaños B.

Software Engineer — Full Stack — AI & Machine Learning — Time Series Analysis

Costa Rica — Open to Relocation — Remote

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Professional Summary

Software Engineer and Computer Engineering student with experience in **full-stack development**, **back-end system design**, and **applied AI/ML research**. Strong background in **time series analysis**, **anomaly detection**, and **change point detection**, applied to behavioral, criminal, and biomedical datasets. Proven ability to engineer scalable software systems while leveraging machine learning for real-world impact.

Professional Experience

AI Research Assistant – Biomedical Time Series & Arrhythmia Detection

Tecnológico de Costa Rica (TEC) — Part-time — Remote

Dec 2025 – Present

- Designed and evaluated machine learning models for early detection of arrhythmic events using cardiac time series data.
- Leveraged change point detection and anomaly detection techniques to identify abnormal physiological patterns.
- Processed and analyzed real-world heart rate and ECG-derived datasets, improving signal robustness under noise.
- Executed statistical validation and comparative evaluation of temporal modeling approaches.

AI Research Assistant – Time Series & Anomaly Detection

Tecnológico de Costa Rica (TEC) — Part-time — Remote

Feb 2025 – Dec 2025

- Benchmarked **16 online change point detection algorithms** across synthetic and real-world datasets.
- Analyzed algorithm performance under high-noise conditions, identifying robustness trade-offs.
- Implemented machine learning models for dropout prediction and behavioral pattern analysis.
- Engineered a web-based labeling tool to support supervised training workflows.

Backend & Software Architecture Engineer

Petzclub — Remote

Jul 2025 – Present

- Architected and implemented scalable backend services and REST APIs.
- Defined system architecture including service decomposition, data flow, and integration patterns.
- Optimized database design and backend performance, improving maintainability and scalability.
- Utilized Docker-based deployments and cloud hosting environments.

Full Stack Developer

Petzclub — Remote

Jul 2024 – Jul 2025

- Built full-stack applications using Node.js (Express) and React Native.
- Delivered responsive frontend components and backend business logic.
- Contributed to a microservices-oriented architecture supporting future scaling.

Full Stack Developer

Colegio Científico de Alajuela — Part-time — Remote

Jan 2024 – Present

- Developed and optimized a web platform using React, HTML, and Tailwind CSS, improving user experience and reducing load times by approximately 30%.

- Applied responsive design techniques and frontend performance optimization strategies.
- Implemented a Node.js-based microservice to handle real-time data requests, reducing operational latency by 25%.
- Designed a modular architecture that improved system scalability and simplified long-term maintenance.
- Documented technical processes and established development best practices, increasing overall team efficiency.

Assistant Database Administrator Intern

Centennial Partners — Temporary Contract — Remote (Panama)

Jan 2024 – Apr 2024

- Supported database management tasks and system modifications, ensuring data integrity and operational efficiency.
- Worked with SQL and MySQL to optimize queries and improve database performance.
- Implemented database updates and maintenance procedures to support evolving system requirements.

Technical Skills

Programming: Python, JavaScript, Java/Kotlin, C/C++

Full Stack: React, React Native, Node.js, Express.js

Backend & Systems: API Design, Backend Architecture, System Design, Docker

Databases: MongoDB, SQL, MySQL, Firebase

AI & Data: Machine Learning, Time Series Analysis, Change Point Detection, Anomaly Detection, Statistical Modeling

Biomedical: Cardiac Time Series, Arrhythmia Detection, Signal Processing

Languages

Spanish: Native

English: Advanced (Professional working proficiency)

Education

B.Sc. in Computer Engineering

Tecnológico de Costa Rica (TEC)

2024 – Expected 2027

Certifications

AlphaFold Workshop – Protein Structure Prediction using AI (UCR, 2025)

Fundamentals of Java Programming – Board Infinity

Leadership & Volunteering

Chair, IEEE Engineering in Medicine and Biology Society (EMBS) – TEC

Student Volunteer, ACM ICIMI Costa Rica 2024

Volunteer, IEEE Costa Rica Section Conferences

Awards

1st Place – World Robot Olympiad International 2023 (AI Project Category)

Gold Medal – National Programming Olympiad 2023 (Costa Rica)

Winner – RetoMarte 2024 (International finals, Spain)