

# LUIS FERNANDO BENAVIDES

COMPUTER ENGINEER

As a passionate and detail-oriented Computer Engineer, I specialize in building innovative software solutions while deepening my expertise in Cloud Computing, DevOps, Full-Stack Development and Game Development. I actively seek challenging opportunities to bridge my academic knowledge with real-world problems, delivering impactful results for teams and organizations.

Thriving in cross-functional environments, I leverage strong communication skills, a collaborative mindset and creative problem-solving to drive projects forward. My proactive attitude, adaptability, and self-taught drive empower me to continuously refine my technical and professional skills through hands-on projects and independent exploration of emerging technologies.

What excites me most about engineering is the chance to constantly learn, evolve, and grow, while creating meaningful solutions that help people.

## EDUCATION

**Instituto Tecnológico de Costa Rica**  
Computer Engineering  
2023 – Expected 2026

## LANGUAGES

**Spanish**  
Native Language  
**English**  
Level B2

## SKILLS

- Programming languages like **Python, Java, C, C++, JavaScript** and **TypeScript**.
- Database management with **SQL Server, MySQL, PostgreSQL, MariaDB, Elasticsearch** and **MongoDB**.
- Containerization & orchestration with **Docker** and **Kubernetes**.
- Development tools like **Git** and **Visual Studio Code**.
- Web development using **Angular**.
- Comfortable working on **Linux** environments.

## PROJECTS

### Semantify

- Built a semantic search engine for song lyrics using Hugging Face embeddings and Elasticsearch, enabling intelligent lyric-based queries.
- Developed a robust Python/Flask API with caching, observability, and endpoints for vector encoding and user interactions.
- Implemented logging, metrics, unit testing, and followed DevOps best practices for maintainability.
- Containerized with Docker for seamless deployment and scalability.

### TuneStay

- Created a full-stack web platform integrating both PostgreSQL and MongoDB to manage song lyrics and Airbnb listings.
- Enabled semantic accommodation recommendations using vector embeddings and Elasticsearch-powered search.
- Architected microservices with Docker and Helm Charts for automated, scalable deployment.

### Crossref Search


- Designed a scalable pipeline to process over 1M scientific articles from AWS S3 using Python CronJobs and Spark SQL.
- Automated metadata enrichment via Crossref API and stored results in Elasticsearch for fast semantic retrieval.
- Integrated RabbitMQ and MariaDB for job orchestration and state tracking.
- Achieved full automation of data ingestion, transformation, and infrastructure provisioning.


### Battle City

- Rebuilt the classic NES game Battle City in pure Java with 8+ levels, enemy AI, a level editor, and dynamic power-ups.
- Applied 6+ design patterns to address game architecture—Command for controls, Prototype for tank variations, Observer for live UI updates, and Decorator for power-ups.
- Developed an extensible enemy spawn system using the Factory Pattern with randomized behaviors per level.

## CONTACT

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