Miguel Fernando Pimiento Escobar

Systems and Computer Engineer
Industrial University of Santander, Colombia

+57-3192205325
mgefrad@gmail.com
GitHub
LinkedIn
Portfolio

Education

•B.Sc. in Systems and Computer Engineering *2021-2025*

Industrial University of Santander, Bucaramanga, Colombia

Projects

•MiThermal – LWIR Hyperspectral Image Simulation

Simulation framework for hyperspectral image acquisition in the long-wave infrared (LWIR) spectrum within 3D environments, incorporating atmospheric absorption effects and physics-based thermal radiation modeling.

- **Link:** MiThermal
- Generation of synthetic hyperspectral data using physically based rendering for infrared imaging research and analysis.
- Realistic modeling of spectral behavior and thermal radiation in 3D scenarios.
- **Technologies:** Mitsuba Renderer, Python, NumPy, FastAPI, Gradio.

•Malaria Detection using AI

Deep learning–based system for detecting malaria parasites in blood smear images, focused on classifying infected and non-infected cells at the trophozoite stage.

- **Link:** Malaria Detection AI
- Training and evaluation of deep learning models for automated cell classification.
- Experimental tracking and metrics using reproducible experimentation tools.
- **Technologies:** Python, PyTorch, NumPy, Weights & Biases.

•UniverseGame – E-commerce Web System

Web-based system for product and sales management, including an online store, shopping cart, order processing, and an administrative dashboard for inventory control and reporting.

- **Link:** UniverseGame
- Full system design with technical documentation, database diagrams, activity diagrams, and sprint planning.
- Robust backend architecture and interactive frontend focused on user experience.
- **Technologies:** Java, Spring Boot, Swagger, Angular, TypeScript, HTML, CSS, PostgreSQL, Docker, Kubernetes, Linux, Microsoft Azure.

•Finanzify – Personal Financial Management Platform

Platform for personal finance management that allows tracking income and expenses by category, monitoring investments, creating budgets, and visualizing financial data through interactive charts.

- **Link:** Finanzify
- Clear financial data visualization to support user decision-making.
- Integrated backend and frontend for efficient financial data management.
- **Technologies:** Java, Spring Boot, Swagger, Angular, TypeScript, HTML, CSS, PostgreSQL.

•Breast Cancer Diagnosis using AI

Application of convolutional neural networks and Vision Transformers on thermographic images for computer-aided breast cancer diagnosis.

- **Link:** Cancer Detection AI
- Achieved 95.3% accuracy through robust cross-validation.
- Integration of explainable AI techniques for model interpretability.
- **Technologies:** Python, PyTorch, NumPy, Pandas, Scikit-learn, OpenCV, Conda, Weights & Biases.

•MyTiendita – Small Business Management System

Comprehensive management system for small businesses to control income, expenses, sales, inventory, product catalog, and operational movements.

– **Link:** MyTiendita
– Centralization of business operations to improve control and decision-making.
– Architecture inspired by scaled-down e-commerce systems.
– **Technologies:** Java, Spring Boot, Swagger, Angular, TypeScript, HTML, CSS, PostgreSQL, Docker, Kubernetes, Linux, Microsoft Azure.

•Kubernetes OS

Academic project developed for an Operating Systems course, focused on Kubernetes concepts and container orchestration.

– **Link:** Kubernetes
– Deployment of a web application with automatic scaling using Horizontal Pod Autoscaler (HPA).
– **Technologies:** Docker, Kubernetes, Linux, Microsoft Azure.

•Bird Species Classification using AI

Artificial intelligence model designed to classify bird species by learning distinctive visual patterns across species.

– **Link:** Bird Classification
– Automation of species identification through supervised learning.
– **Technologies:** Python, NumPy, Pandas, Scikit-learn.

Experience

•Full Stack Developer *March 2024 – December 2024*

Industrial University of Santander (DTIC) Hybrid

– Contributed to the development and maintenance of institutional full stack applications in a production environment, supporting both backend and frontend tasks under supervision.
– Implemented new features, fixed bugs, and maintained existing systems.
– Backend development using Java and Spring Boot, and frontend implementation with Angular.
– Managed and queried Oracle relational databases.
– Executed unit testing with JUnit and developed views using HTML and CSS.
– Gained hands-on experience working with real-world production software workflows.

•Full Stack Developer *February 2025 – December 2025*

Industrial University of Santander (DTIC) Hybrid

– Developed and maintained full stack solutions with increased autonomy within the development team.
– Actively implemented new features, resolved incidents, and delivered continuous system improvements.
– Contributed to production deployments while balancing academic and professional responsibilities.
– Continuously worked with Java, Spring Boot, Angular, and Oracle in institutional applications.
– Applied best development practices and unit testing using JUnit.

Technical Skills

Languages: Java, Python, JavaScript, TypeScript, SQL, HTML, CSS.
Backend: Spring Boot, FastAPI, Swagger, OpenAPI.
Frontend: Angular, TypeScript, JavaScript, HTML5, CSS3, Gradio.
Databases: PostgreSQL, Oracle, MySQL, MongoDB.
DevOps & Cloud: Git, Docker, Kubernetes, Microsoft Azure, Linux.
AI & Data Science: PyTorch, NumPy, Pandas, Scikit-learn, OpenCV, Mitsuba Renderer, Conda, Weights & Biases.
Tools: Visual Studio Code, GitHub, GitLab, REST APIs.
Areas of Interest: Full Stack Development, Backend Architecture, Applied Artificial Intelligence, Distributed Systems, Cloud Computing.

Soft Skills

- Strong problem-solving and logical reasoning skills applied to technical and research contexts.
- Analytical mindset focused on pattern identification, process optimization, and data-driven decision-making.
- Research-oriented approach for designing, experimenting, and validating solutions in academic and production environments.
- Clear technical communication to explain complex ideas to both technical and non-technical stakeholders.
- Collaborative teamwork within multidisciplinary teams, actively contributing to shared goals.
- Continuous learning and autonomy to efficiently adopt new technologies and tools.
- High adaptability to new environments, technologies, and work methodologies.