

Miguel Tovar

AI & Full Stack Developer (Node.js, Python, Vue,Laravel)

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Summary

AI & Full Stack Developer specialized in designing intelligent platforms that optimize business processes through **Machine Learning** and **AI**. Expertise in conversational assistants and predictive analytics, with a solid foundation in web development. Skilled at designing scalable end-to-end solutions that integrate **Machine Learning** pipelines to automate processes, optimize decision-making, and enhance user experience. Experienced in embedding AI services and APIs into enterprise-grade applications.

Core Competencies

- Conversational AI & Chatbots
- Machine Learning Models
- Full Stack Web Development
- API Development & Systems Integration
- Predictive Analytics & Business Intelligence
- Agile methodologies (Scrum & XP)

Experience

AI Software Engineer (Python, TensorFlow, OpenCV)

2025 - Present

SenseTrace IA (Thesis) | Jose Antonio Paez University

- Built a multimodal system capturing keyboard, mouse, and webcam data to detect behavioral patterns in real time.
- Applied unsupervised and supervised **Machine Learning** models (anomaly detection, classification, CNNs) to identify stress, fatigue, and distraction.
- Integrated computer vision for ergonomics and micro-expression analysis.
- Designed interpretable AI outputs: hybrid approach combining **Machine Learning** predictions with heuristics and cognitive models (GOMS-KLM) for actionable, human-readable alerts.
- Delivered a desktop application with GUI and a background monitoring agent.

Project Scope: Developed a desktop application powered by artificial intelligence, focused on detecting and analyzing behavioral patterns in computer system usage, with the goal of enhancing employee well-being and improving organizational productivity

Key Achievement: Delivered a working multimodal AI platform capable of detecting fatigue, stress, hyperactivity, inactivity, and multitasking inefficiency in real time, with explainable alerts and long-term behavioral profiling.

Tech Stack: Python (scikit-learn, TensorFlow/Keras, OpenCV, MediaPipe, Pandas, Joblib), PyQt5, PyGetWindow, Pynput, PostgreSQL, CSV datasets.

AI Software Engineer (Conversational AI & Machine Learning)

May 2025 - August 2025

Farmacia Internacional| (Academic Project)

- Developed a conversational assistant with RAG for inventory, sales, and expiration queries.
- Embedded **Machine Learning** models for demand forecasting and stock optimization.
- Reduced stockouts and improved accuracy in forecasting and decision-making.
- Automated routine decision-making by embedding **Machine Learning** models into the chat flow, reducing manual analysis and freeing staff to focus on customer service and critical tasks.

- Enhanced accessibility and usability by designing the assistant to be intuitive for non-technical users, ensuring adoption across all staff levels without additional training.

Project Scope: Designed and developed an AI-powered pharmacy management platform with a conversational assistant that enabled staff to interact with business data through natural language, improving pharmacy operations and decision-making.

Key Achievement: Automated sales insights and optimized stock management, reducing manual decision-making, improving forecasting accuracy, and enabling staff to make faster, data-driven operational decisions

Tech Stack: Node.js (Express.js, Jest), Vue 3 (Cypress), FastAPI (Python, PyTest), PostgreSQL + pgvector, Pandas, NumPy, scikit-learn, TensorFlow/Keras, OpenAI API, Postman

AI Software Engineer (Conversational AI, RAG & Twilio Integration)

January 2025 – May 2025

Panadería Orquídea de Oro | Freelance Project

- Enhanced an e-commerce platform with a Chatbot powered by RAG and NLU.
- Built an intent classification and semantic search pipeline for product queries.
- Orchestrated order flows with automated stock validation and checkout.
- Built an orchestration service in Laravel to map chatbot intents into existing controllers, ensuring seamless order creation, stock validation, and checkout.
- Integrated Twilio WhatsApp API for real-time conversational ordering, including interactive confirmations, stock-aware cart building, and automated receipt generation.

Project Scope: Augmented an existing e-commerce platform with a conversational AI system, combining NLU, RAG, and WhatsApp integration to automate customer interactions, streamline order processing, and deliver intelligent product recommendations.

Key Achievement: Delivered an AI-driven conversational commerce solution that automated >70% of customer interactions, increased WhatsApp order conversion, and enabled semantic product discovery with real-time stock validation.

Tech Stack: Laravel (PHP), Vue 3, MySQL, Node.js (Express), FastAPI (Python), Twilio WhatsApp API, FAISS/pgvector, scikit-learn, Pandas, NumPy, Docker, Postman.

AI Software Engineer (Conversational AI & SaaS Development)

November 2024 - January 2025

Pro Pádel Club | Academic & Freelance Project

- Developed a SaaS for sports reservations with real-time booking and scheduling.
- Implemented event & tournament management modules, as well as a complete admin panel with analytics dashboards, user management, and role-based access control.
- Implemented a **Machine Learning** chatbot to handle bookings, cancellations, and FAQs.
- Integrated Twilio to enable reservations and payments via WhatsApp.
- Orchestrated seamless interaction between chatbot, reservation system, and payment workflows, reducing manual interventions and enabling 24/7 availability.

Project Scope: Full-stack development of a sports reservation SaaS extended with **Machine Learning**-based conversational AI, enabling users to manage bookings via web and WhatsApp seamlessly.

Key Achievement: Automated over **70% of reservations** through the AI chatbot on WhatsApp, significantly improving user experience, reducing administrative workload, and increasing booking reliability.

Tech Stack: Vue 3, Laravel 10 (PHP 8.1), MySQL, Bootstrap 5, JWT, Axios, FastAPI (Python), scikit-learn, Twilio WhatsApp API, Docker, Postman.

Full Stack Developer (Fitness SaaS & Predictive Analytics)

December 2023

Plataforma Fitness Inteligente | School Project

- Designed a fitness platform with personalized health calculators and training plans.
- Built dashboards with real-time analytics and progress tracking.
- Implemented secure authentication and role-based access for users and coaches.
- Developed workout management modules with automated tracking and comparisons.
- Improved retention with data-driven recommendations and predictive insights.

Project Scope: End-to-end development of a fitness management SaaS combining scientific health calculators, personalized training modules, and predictive analytics.

Key Achievement: Delivered a scalable and secure fitness platform that merged scientific rigor with engaging user experience, achieving improved user retention through predictive health insights.

Tech Stack: Laravel 10 (PHP 8.1), Blade, TailwindCSS, Bootstrap 5, Vite, Axios, MySQL/PostgreSQL, Eloquent ORM, JWT, Chart.js.

IT Systems Analyst

Refrigeración Europa C.A | Carabobo, Venezuela

January 2021 – January 2022

Managed preventive and corrective maintenance of computer servers, ensuring operational continuity and critical system availability

- Designed and implemented network solutions to optimize connectivity and performance of internal communication infrastructure
- Performed constant supervision of technological infrastructure, proactively identifying and resolving incidents to maintain system stability
- Implemented backup and recovery strategies for critical systems, minimizing data loss risks and ensuring business continuity during outages.
- Monitored and maintained cybersecurity protocols, including firewall configurations and antivirus updates, to safeguard sensitive company data.
- Documented technical procedures and incident reports, contributing to knowledge base development and improving response times for future issues.

Education

Computer Engineering – Universidad José Antonio Páez (2020 – Present)

Certifications

- **Machine Learning and AI with Python** – HarvardX (edX), 2023
- **C Programming with Linux** – DartmouthX & IMTx (edX), 2024

Languages

- Spanish (native).
- English (C1).