

# Juan Enrique Ayala Zapata

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## EDUCATION

<b>Monterrey's Institute of Technology and Higher Education (Tecnológico de Monterrey)</b> <i>Bachelor of Science in Computer Science, Minor in Cybersecurity</i>	Querétaro, MX
	<i>Expected: June 2027</i>

**GPA:** 96.35/100 (3.9/4.0) | **Academic Talent Scholarship Recipient**  
**Relevant Coursework:** Data Structures & Algorithms, Object-Oriented Programming, IoT Implementation, Computational Thinking

## EXPERIENCE

<b>CTO &amp; Co-Founder</b> <i>Neural Harvest - AgTech Startup</i>	February 2025 – Present
<ul style="list-style-type: none"><li>Selected for <b>Dedalus Break In Program</b> residency at The Residency and London Founder House in San Francisco, joining 20 founders from 13 countries in month-long AI startup accelerator</li><li>Leading development of AI-powered precision agriculture platform combining satellite imagery analysis with proprietary ML crop simulation engines</li><li>Architecting scalable microservices infrastructure processing multi-spectral satellite data with hybrid database systems and containerized deployment</li><li>Managing cross-functional team implementing enterprise-grade RBAC, real-time IoT monitoring, and automated field communication systems</li></ul>	<i>Querétaro, MX</i>
<b>Back-End Developer</b> <i>ceams.co - Digital Agency</i>	March 2024 – May 2025
<ul style="list-style-type: none"><li>Developed scalable back-end infrastructure using <b>Node.js</b> and <b>MySQL</b>, optimizing data collection and storage systems for client web applications</li><li>Improved website performance by 40% through server-side optimizations, efficient database query implementation, and caching strategies</li><li>Enhanced SEO performance and search engine visibility through technical optimizations, schema markup implementation, and page speed improvements</li></ul>	<i>Querétaro, MX</i>

## PROJECTS

<b>TreeHacks - Sentinel AI Security Scanner</b>   <i>Python, Next.js, Gemini, Playwright, Supabase</i>	February 2026
<ul style="list-style-type: none"><li>Architected autonomous penetration testing platform deploying swarm of 10 specialized AI agents for concurrent web security scanning, achieving comprehensive vulnerability detection through coordinated reconnaissance, exploitation, and analysis phases</li><li>Engineered Flask-based orchestration engine with <b>asyncio</b> coordination managing concurrent agent execution across Spider (attack surface mapping), SQLi/XSS fuzzing, CORS/header auditing, and autonomous <b>Playwright</b>-powered Red Team agent with observe-think-act loop</li><li>Built real-time <b>Next.js 16</b> dashboard with <b>Supabase Realtime</b> event streaming, displaying live agent progress, findings, and severity-weighted security scoring (A-F grades) with <b>Gemini</b>-generated remediation reports including OWASP references and code-level fixes</li></ul>	
<b>Prometheus - AI-Powered Recruitment Platform</b>   <i>Python, Flask, Next.js, Google Gemini 2.5, Firebase</i>	October 2025
<ul style="list-style-type: none"><li>Architected conversational AI recruitment system using <b>Google Gemini 2.5 Flash</b> with Agent Development Kit (ADK), implementing progressive filtering that maintains context across multi-turn dialogues for semantic candidate matching beyond simple keyword search</li><li>Engineered full-stack platform with <b>Flask REST API</b>, <b>Next.js 15</b>, and <b>Firebase Firestore</b>, integrating <b>Twilio WhatsApp API</b> for 98% message open rates versus 20% email engagement, including CV parsing and automated job description generation</li><li>Developed semantic matching algorithms with transferable skills analysis (Vue.js → React equivalence) achieving 0-100 compatibility scoring with detailed reasoning, reducing candidate discovery time from 3-5 days to 2 minutes</li></ul>	
<b>Bloombly - Wildflower Bloom Prediction Platform</b>   <i>Python, Flask, TensorFlow, Google Earth Engine</i>	October 2025
<ul style="list-style-type: none"><li>Engineered ML-powered platform predicting wildflower blooms using <b>NASA satellite data</b> (MODIS, SMAP) with 31+ ecological features including spring phenology detection, growing degree days, and soil water stress analysis for biodiversity conservation and climate research</li><li>Developed <b>Gradient Boosting classifier</b> achieving 0.72-0.85 ROC-AUC with advanced feature engineering combining spatial, temporal, and environmental variables across 73 years of historical climate data, including specialized cherry blossom model with ±3 days accuracy</li><li>Built full-stack application with <b>Flask REST API</b>, <b>Google Earth Engine</b> integration, and interactive 3D globe visualization supporting global bloom predictions with 90-day forecasting capability for tourism and ecological planning</li></ul>	
<b>Via Alta - Academic Enrollment Management System</b>   <i>Next.js, PostgreSQL, TypeScript</i>	Feb – May 2025
<ul style="list-style-type: none"><li>Developed comprehensive enrollment and schedule management system using <b>Next.js 15</b>, <b>React 19</b>, and <b>TypeScript</b> with automated course registration, built-in genetic algorithm for intelligent schedule generation with conflict resolution for professors, classrooms, and student schedules</li><li>Designed <b>PostgreSQL</b> database with 10+ normalized tables and RESTful API architecture, deployed on <b>Heroku</b> with CI/CD pipeline, integrating multi-role authentication system with 80% reduction in manual processing time</li></ul>	

## TECHNICAL SKILLS

<b>Languages:</b> Python, C/C++, JavaScript, TypeScript, SQL/MySQL, HTML/CSS, R, MATLAB
<b>Frameworks &amp; Libraries:</b> Flask, Next.js, React, TensorFlow, Scikit-learn, Pandas, NumPy, Node.js, Express.js, BeautifulSoup
<b>Tools &amp; Technologies:</b> Playwright, Supabase, Docker, Google Cloud Platform, AWS, Google Earth Engine, Git, PostgreSQL, Firebase
<b>Specializations:</b> AI Agent Systems, Penetration Testing, Cybersecurity, Machine Learning, Full-Stack Development, Real-time Systems, Web Security