Randley Morales, Ph.D.

Mathematician & Machine Learning Specialist |
Generative AI, Computer Vision & Predictive Modeling

+1 (805) 946-8257
randley@gmail.com
www.randleymorales.com

PROFESSIONAL SUMMARY

Mathematician and AI Engineer with 10+ years of experience transforming advanced mathematical theory into production-grade machine learning systems. I specialized in Generative AI, Computer Vision, and predictive modeling, with hands-on expertise building end-to-end ML pipelines — from research and feature engineering to API deployment and cloud-ready applications.

Strong background in Differential Geometry and Numerical Linear Algebra enables deep understanding of model behavior, optimization, and high-dimensional data structures. Proven ability to design scalable RAG architectures, deep learning models, and ensemble systems that deliver measurable business impact.

Combines research rigor, full-stack development experience, and applied machine learning to solve complex engineering and data-driven challenges.

EDUCATION

Post Graduate Program in AI & Machine Learning: Business Applications | The University of Texas at Austin – McCombs School of Business (May 2025 – Feb 2026)

Ph.D in Mathematics | Universidad Central de Venezuela (2009)
- **Dissertation:** "*Path Splines with Conic Envelopes*".

M.S. in Mathematics | Universidad Central de Venezuela (2003)
- **Dissertation:** "*Geometric Modeling Families 2D and 3D Lemniscates*".

B.S. in Mathematics | Universidad Central de Venezuela (2000)
- **Dissertation:** "*Construction of Polynomial Bezier Splines Continuous Curvature G2*".

PROFESSIONAL EXPERIENCE

MATEMATIKAS XYZ

Oxnard, CA | May 2020 - Present

Mathematical Visualization Specialist & Technical Developer

• Engineered algorithmic visualizations to demonstrate complex geometric theorems, utilizing mathematical software to bridge the gap between abstract theory and visual representation.

• Applied geometric modeling principles to render high-fidelity 2D/3D forms (surfaces, curves, and topologies), leveraging research in path splines to ensure mathematical accuracy.

• Optimized production pipelines for technical educational content, managing the end-to-end workflow to deliver high-precision graphics under strict timeline constraints.

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CALIFORNIA STATE UNIVERSITY, CHANNEL ISLANDS

Camarillo, CA | JAN 2020 - MAY 2020

Mathematics Teaching Associate

• Delivered academic instruction in mathematics, managing classroom lectures and laboratory sessions.

• Evaluated student performance through the administration of examinations and rigorous grading of course materials.

SAN NUTRITION CORP

Oxnard, CA | Aug 2015 – Apr 2020

Senior Web Developer & Technical Designer

• Architected and deployed full-stack web solutions, managing the complete software development lifecycle from initial system design to testing and maintenance.

• Engineered custom e-commerce applications, writing robust code for high-traffic web platforms and overseeing rigorous testing protocols.

• Integrated high-fidelity 2D/3D visual assets into digital products, optimizing graphics rendering for web performance and user impact.

AXXIOM DATA INC

Glendale, CA | Apr 2014 – Dec 2014

Web Developer

• Refactored and optimized web interface modules to enhance User Experience (UX), modernizing legacy site sections while ensuring the stability of core features.

• Generated specialized digital assets, designing and implementing custom graphics on a daily cadence to support data-driven marketing initiatives.

UNIVERSIDAD CENTRAL DE VENEZUELA

Caracas, VE | Oct 2000 – Jun 2012

Mathematics Professor & Researcher

• Directed research initiatives in Applied Geometry and its application to Computer Graphics, bridging theoretical mathematics with computational visual fields.

• Lectured on advanced topics including Differential Geometry, Numerical Linear Algebra, and Topology at both undergraduate and graduate levels.

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TECHNICAL SKILLS

• **Generative AI & LLM Stack:** RAG Architectures, LangChain, Semantic Search, Vector Databases (Pinecone, ChromaDB), Prompt Engineering, OpenAI API, Hugging Face Transformers.

• **Deep Learning & Computer Vision:** CNNs (ResNet, VGG16, EfficientNet), Object Detection (YOLO), Image Segmentation, Transfer Learning, OpenCV, Geometric Deep Learning.

• **Machine Learning & Data Science:** XGBoost, Random Forests, Gradient Boosting, PCA, K-Means Clustering, Hyperparameter Tuning (GridSearch/Optuna), A/B Testing.

• **Mathematical Expertise:** Differential Geometry, Computational Geometry, Numerical Linear Algebra, Topology, Differential Equations, Probability Theory, Statistics.

• **Programming & MLOps:** Python (Pandas, NumPy, Scikit-learn), PyTorch, TensorFlow/Keras, SQL, Docker, Flask, Streamlit, Git, LaTeX, MATLAB, MapleSoft.

AI & MACHINE LEARNING PROJECTS

SUPERKART

End-to-End Sales Forecasting Engine

Stack: XGBoost, Docker, Flask, Streamlit, Hugging Face

• Engineered a full-stack predictive modeling system to forecast quarterly revenue, utilizing rigorous EDA and hyperparameter tuning to optimize model performance.

• Operationalized the solution by containerizing the model with Docker and exposing endpoints via Flask, deploying a live interactive dashboard for real-time stakeholder decision-making.

HELMNET

Computer Vision for Industrial Safety

Stack: Python, TensorFlow/Keras, OpenCV, CNNs, Data Augmentation

• Designed a custom Convolutional Neural Network (CNN) to automate safety helmet detection in high-risk environments, implementing advanced data augmentation (geometric transformations) to handle diverse lighting conditions.

• Achieved 98.5% accuracy on the test set, creating a scalable automated monitoring tool that significantly reduces manual compliance oversight.

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MEDICAL ASSISTANT

Generative AI & RAG Pipeline

Stack: Python, LangChain, OpenAI GPT-4, Pinecone (Vector DB), Semantic Search

Architected a Retrieval-Augmented Generation (RAG) system to synthesize complex medical data, engineering vector embeddings to enable high-precision semantic search across unstructured text.

• Reduced information retrieval time by 40%, delivering accurate, context-aware responses to user queries while strictly adhering to domain-specific constraints.

RENEWIND

Predictive Maintenance for Renewable Energy

Stack: Deep Learning (ANN), SMOTE, Scikit-learn, Python

• Developed a binary classification model to predict wind turbine component failures, utilizing SMOTE techniques to resolve significant class imbalances in sensor data.

• Optimized for Recall to minimize false negatives, successfully identifying 90% of potential failures proactively and reducing projected maintenance downtime.

EASYVISA

Visa Approval Prediction Model

Stack: Ensemble Learning (Bagging/Boosting), Pandas, NumPy

• Constructed a robust ensemble machine learning model to assess visa application risks, integrating demographic and economic indicators.

• Maximized the F1-score to balance precision and recall, delivering a scalable classification tool to streamline high-volume administrative reviews.

PERSONAL LOAN CAMPAIGN

Predictive Customer Classification

Stack: Scikit-learn, Decision Trees, Classification Algorithms, Pandas, Matplotlib

• Engineered a predictive classification model using Decision Trees to identify high-conversion customer segments, leveraging demographic analysis to target personal loan offers effectively.

• Optimized marketing resource allocation by prioritizing high-probability leads, tuning model precision and recall to maximize campaign conversion rates while minimizing acquisition costs.

FOODHUB

Data-Driven Revenue Strategy

Stack: Python, Pandas, Seaborn, Matplotlib, Exploratory Data Analysis (EDA)

• Executed rigorous Exploratory Data Analysis (EDA) to uncover demand patterns across cuisines and restaurants, performing deep univariate and multivariate analysis on transactional datasets.

• Translated complex data patterns into actionable business strategies for revenue growth, generating high-fidelity visual reports to communicate findings and trends to non-technical stakeholders.

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CERTIFICATIONS & PROFESSIONAL DEVELOPMENT

- **Pandas Analytics** | ***Coddy Team*** (Dec 2025)
- **SQL for Advanced** | ***Coddy Team*** (Dec 2025)
- **Learn to Code with AI** | ***Scrimba*** (Dec 2025)
- **SQL for Intermediate** | ***Coddy Team*** (Dec 2025)
- **Learn RAG** | ***Scrimba*** (Dec 2025)
- **Introduction to SQL** | ***Scrimba*** (Nov 2025)
- **SQL for Beginners** | ***Coddy Team*** (Nov 2025)
- **Ethics of AI** | ***Great Learning*** (Oct 2025)
- **Introduction to AI Agents** | ***Great Learning*** (Sep 2025)
- **Python Foundations** | ***Great Learning*** (Jul 2025)

Pandas Analytics (Dec 2025)

This certification validates proficiency in Pandas, the industry-standard Python library for data manipulation and analysis. Earned through Coddy, a practice-driven platform, the credential emphasizes hands-on application over theoretical knowledge, requiring the successful completion of 18 coding challenges across 19 specialized lessons.

Certification Overview:

- Course Name: Pandas Analytics
- Provider: Coddy (Coddy.tech), an interactive, practice-driven coding platform.
- Recipient: Randley Morales
- Date of Completion: December 16, 2025
- Course Load: 19 Lessons, 18 Challenges
- Issued By: Kevin Spektor, CTO
- Credential ID: PuC45Y-8cFuqK
- Verification URL: https://coddy.tech/certifications/PuC45Y-8cFuqK

Key Skills & Tech Stack:

- Data Structures: Proficiency in handling and manipulating core Pandas structures, specifically DataFrames and Series.
- Data Cleaning: Techniques for identifying and handling missing data, ensuring dataset integrity for analysis.
- Data Manipulation: Advanced filtering of datasets, modifying strings, and performing custom data modifications to transform raw data.
- Data Ingestion: Loading external data into DataFrames and preparing it for processing.

Tech Stack:

Python, Pandas, Data Analysis, Data Cleaning.

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SQL for Advanced (Dec 2025)

SQL for Advanced is a specialized course designed to master complex querying techniques for sequential and analytical data processing. The curriculum consists of 13 lessons and 12 coding challenges, focusing heavily on Window Functions and query optimization strategies to handle sophisticated data reporting needs.

Certification Overview:

- Course Name: SQL for Advanced
- Provider: Coddy (Coddy.tech), an interactive, practice-driven coding platform.
- Recipient: Randley Morales
- Date of Completion: December 15, 2025
- Course Load: 13 Lessons, 12 Coding Challenges
- Issued By: Kevin Spektor, CTO
- Credential ID: PuC45Y-2UvLwC
- Verification URL: https://coddy.tech/certifications/PuC45Y-2UvLwC

Key Skills & Tech Stack:

- Window Functions: Expert use of ROW_NUMBER, RANK, DENSE_RANK, and NTILE for ranking and partitioning datasets.
- Sequential Analysis: Utilizing LEAD and LAG functions to compare current row data with preceding or following rows.
- Query Simplification: Implementing Common Table Expressions (CTEs) using the WITH keyword to organize complex logic and improve readability.
- Advanced Partitioning: Applying PARTITION BY and ORDER BY clauses within window functions for granular data segmentation.

Tech Stack:

Advanced SQL, Data Warehousing, Analytical Querying.

Learn to Code with AI (Dec 2025)

Learn to Code with AI is a comprehensive course focused on integrating Artificial Intelligence tools into the software development workflow. The curriculum consists of 45 lessons and 4.5 hours of content, covering techniques to accelerate coding tasks, debug effectively, and convert code between languages using AI assistance.

Certification Overview:

- Course Name: Learn to Code with AI
- Provider: Scrimba
- Recipient: Randley Morales
- Date of Completion: December 15, 2025
- Course Load: 45 lessons, approx. 4.5 hours
- Instructor/Signatory: Per Harald Borgen, CEO
- Credential ID: cert2JbLs3qgBU5faq35bx1QXq63LDw60HTkhwMLaC
- Verification URL:

https://scrimba.com/learn-to-code-with-ai-c02m;cert2JbLs3qgBU5faq35bx1QXq63LDw6oHTkhwMLaC

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Key Skills & Tech Stack:

• AI-Assisted Coding: Using ChatGPT and similar tools to write, refactor, and explain code efficiently.
• Prompt Engineering: Crafting precise prompts to generate optimal code snippets and solutions.
• Code Conversion: Leveraging AI to translate logic between different programming languages.
• Debugging & Problem Solving: Utilizing AI as a pair programmer to identify bugs and explore alternative solutions.

Tech Stack:

Artificial Intelligence (AI), Large Language Models (LLM), ChatGPT, Software Development.

SQL for Intermediate (Dec 2025)

The SQL for Intermediate certification, issued by Coddy, signifies an advanced capability to navigate and extract value from relational databases. Moving beyond basic CRUD operations, this credential focuses on the analytical power of SQL through 15 hands-on coding challenges, ensuring the holder can solve real-world data problems.

Certification Overview:

• Course Name: SQL for Intermediate
• Provider: Coddy (Coddy.tech), an interactive, practice-driven coding platform.
• Recipient: Randley Morales
• Date of Completion: December 14, 2025
• Course Load: 16 Lessons, 15 Coding Challenges
• Issued By: Kevin Spektor, CTO
• Credential ID: PuC45Y-kqdSmI
• Verification URL: https://coddy.tech/certifications/PuC45Y-kqdSmI

Key Skills & Tech Stack:

• Advanced Joins: Proficiency in LEFT/RIGHT JOIN, SELF JOIN, and UNION to combine datasets from multiple sources.
• Statistical Analysis: Using aggregate functions and grouping (GROUP BY) to calculate meaningful statistics and insights.
• Complex Querying: Implementing Subqueries for nested data retrieval and Engineering New Columns for advanced data transformation.
• Data Management: Handling date/time data types and managing relationships across multiple RDBMS tables.

Tech Stack:

SQL, Relational Databases (RDBMS), Data Analysis.

Learn RAG (Retrieval-Augmented Generation) (Dec 2025)

The Learn RAG (Retrieval-Augmented Generation) certification from Scrimba marks a transition from traditional data analysis into the world of AI Engineering. This credential validates the ability to build "knowledge-aware" AI systems that ground Large Language Models (LLMs) in specific, private datasets to prevent hallucinations and provide context-specific answers.

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Certification Overview:

• Course Name: Learn RAG (Retrieval-Augmented Generation)
• Provider: Scrimba
• Recipient: Randley Morales
• Date of Completion: December 2, 2025
• Course Load: 21 lessons, approx. 1.6 hours
• Instructor/Signatory: Per Harald Borgen, CEO
• Credential ID: cert2JbLs3qgBU5faq35bx1QXq6tRy5WXpnwpRYRFi
• Verification URL:
scrimba.com/learn-rag-c033;cert2JbLs3qgBU5faq35bx1QXq6tRy5WXpnwpRYRFi

Key Skills & Tech Stack:

• base, specifically using Supabase, to store data in a format AI can "understand".
• Embeddings: The course covers creating text embeddings (converting text into number vectors) using the OpenAI API to enable semantic search.
• Semantic Search: Unlike the keyword search you learned in SQL (WHERE name LIKE...), this validates you can implement meaning-based search (e.g., finding "delicious dinner" when searching for "tasty food").
• Text Chunking: You learned strategies for splitting large documents into smaller, manageable "chunks" to optimize AI retrieval.
• Real-World Application: The course culminates in building a "Solo Project: PopChoice" and a proof-of-concept AI Chatbot that can answer questions based on a specific knowledge base.

Introduction to SQL (Nov 2025)

The Introduction to SQL certification from Scrimba serves as a rigorous foundation in relational database management, going well beyond basic syntax to cover professional-grade querying techniques. Through 48 lessons and a practical, project-based curriculum centered on a "Retro Car Store" database, this credential proves the ability to interact with and extract value from complex data systems.

Certification Overview:

• Course Name: Intro to SQL
• Provider: Scrimba
• Recipient: Randley Morales
• Date of Completion: November 25, 2025
• Course Load: 48 lessons, spanning approx. 3.8 hours of content
• Instructor/Signatory: Per Harald Borgen, CEO
• Credential ID: cert2ffentAFNfAqNCv8rRN18moVCU4xuee5UeC4Faxbh6czp2
• Verification URL:
scrimba.com/intro-to-sql-claviq0aha;cert2ffentAFNfAqNCv8rRN18moVCU4xuee5UeC4Faxbh6czp2

Key Skills & Curriculum:

• Core Fundamentals: Writing queries using SELECT, filtering with WHERE, sorting with ORDER BY, and limiting results.
• Data Manipulation: Modifying the database using INSERT, UPDATE, and DELETE commands.
• Relational Data: Creating tables and using JOINS (Inner, Left, Right) to combine data across multiple tables.

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• Aggregation: Using functions like COUNT, SUM, and GROUP BY to analyze data.
• Advanced Logic: Unlike many basic intro courses, this curriculum includes advanced concepts like Subqueries, CASE statements, and existence checks (ANY, ALL, EXISTS).
• Project Work: The course typically involves building queries for a real-world scenario, such as a retro car store database.

SQL for beginners (Nov 2025)

The SQL for Beginners certification from Coddy marks the successful entry into the world of relational databases through a practice-first methodology. Rather than just memorizing syntax, this credential focuses on solving functional logic puzzles, culminating in "Final Challenges" that simulate real-world data scenarios like law enforcement records and election results.

Certification Overview:

• Course Name: SQL for Beginners
• Provider: Coddy (Coddy.tech), an interactive, practice-driven coding platform.
• Recipient: Randley Morales
• Date of Completion: November 19, 2025
• Issued By: Kevin Spektor, CTO
• Credential ID: PuC45Y-qrrEEX
• Verification URL: https://coddy.tech/certifications/PuC45Y-qrrEEX

Key Skills & Topics Covered:

• Database Concepts: Understanding what a database is and how it is structured.
• Basic Queries: Writing statements to retrieve data, including working with unique values and nulls.
• Conditional Logic: Using conditional statements (likely WHERE, AND, OR) to filter specific data.
• Sorting & Limiting: Organizing results and restricting the number of records returned.
• Advanced Filtering: Using keywords like IN, BETWEEN, and LIKE for more complex data retrieval.
• Aliases: Renaming columns or tables for better readability.
• Practical Application: The course concludes with "Final Challenges" (e.g., simulating police arrests or election data scenarios) to test your ability to solve real-world problems.

Ethics of AI (Oct 2025)

The Ethics of AI certification from Great Learning represents a critical layer of professional responsibility, moving beyond technical implementation to address the societal impact of artificial intelligence. This credential validates a comprehensive understanding of the moral frameworks required to build trustworthy, unbiased, and transparent AI systems.

Certification Overview:

• Course Name: Ethics of AI
• Provider: Great Learning
• Recipient: Randley Morales
• Date of Completion: October, 2025
• Issued By: Harish K. Subramanian, Academic Director
• Verification URL: https://www.mygreatlearning.com/certificate/JUAPUVEV

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Key Concepts Likely Covered:

• Algorithmic Bias: Understanding how training data (like the datasets you queried in SQL) can introduce unfair prejudices into AI models.
• Fairness & Accountability: Learning frameworks to ensure AI decisions (like those made by your "Agents") are equitable and that there is a clear chain of responsibility.
• Transparency & Explainability (XAI): The importance of "Black Box" models being interpretable—critical when using the complex RAG systems you learned to build.
• Data Privacy: Navigating the ethical boundaries of surveillance and data usage, which is directly relevant to the vector databases you managed in your RAG course.

Introduction to AI Agents (Sep 2025)

The Introduction to AI Agents certification from Great Learning marks an advancement from static AI models to Agentic AI—systems capable of autonomous decision-making and task execution. This credential validates the ability to design and implement "agents" that don't just generate text, but actively perceive their environment and take goal-oriented actions.

Certification Overview:

• Course Name: Introduction to AI Agents
• Provider: Great Learning
• Recipient: Randley Morales
• Date of Completion: September, 2025
• Issued By: Harish K. Subramanian, Academic Director
• Verification URL: https://www.mygreatlearning.com/certificate/TXZKQZNG

Key Skills & Concepts Covered:

• Agentic vs. Generative: Understanding the difference between AI that creates content (GenAI) and AI that executes tasks/decisions (Agentic AI).
• Decision-Making Models: Learning how agents make choices using frameworks like Rule-Based, Goal-Based, and Utility-Based systems.
• Reinforcement Learning (RL): The course typically introduces the fundamentals of RL, specifically Q-Learning and Q-Tables, teaching how agents learn from environmental rewards rather than just static datasets.
• Agent Environments: Analyzing different environments (Static vs. Dynamic, Fully vs. Partially Observable) to determine how an agent should perceive and act.
• Python Implementation: Building a simple autonomous agent using Python to solve navigation or optimization problems.

Python Foundations (Jul 2025)

The Python Foundations certification from Great Learning represents the core architectural bedrock for modern AI development. This credential validates a transition from basic scripting to professional Software Engineering principles, ensuring that data-driven projects—like those in SQL, Pandas, and RAG—are built on a scalable and efficient codebase.

Certification Overview:

• Course Name: Python Foundations

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• Provider: Great Learning
• Recipient: Randley Morales
• Date of Completion: July, 2025
• Issued By: Mohan Lakhamaraju, Founder and CEO, Great Learning
• Verification URL: https://www.mygreatlearning.com/certificate/CIOCXPSC

Key Skills & Concepts Covered:

• Core Syntax & Logic: Mastery of variables, data types (Integers, Floats, Strings), and flow control (If-Else conditions, For/While loops) to write logical scripts.
• Data Structures: Using Lists, Tuples, Dictionaries, and Sets to organize and store complex data efficiently—a critical skill for handling the JSON outputs from LLMs in your RAG projects.
• Modular Programming: Writing Functions to create reusable code blocks, which is essential for defining "Tools" for AI Agents.
• Object-Oriented Programming (OOP): Understanding Classes and Objects, which is the exact architectural pattern used to build the "Agents" and "Retrievers" in frameworks like LangChain or Scrimba's AI courses.
• Data Science Libraries: The curriculum typically introduces NumPy and Pandas, bridging the gap between raw coding and mathematical analysis.

References Available Upon Request

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