Francisco Gutierrez

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PROFESSIONAL SUMMARY

Versatile Software Engineer with over 15 years of experience, specializing in Haskell, Python, functional programming, AI, and machine learning. Proven expertise in building backend systems, algorithmic solutions, and AI-driven applications for leading Silicon Valley tech companies. Adept at applying machine learning, statistics, and mathematical models to solve complex problems. Currently expanding knowledge in quantitative finance and options trading, with a focus on leveraging AI for financial applications. Experienced in both startups and larger organizations, with a track record of quickly adapting to new challenges and technologies.

KEY SKILLS

Languages: Haskell, Python, SQL, Julia, R, JavaScript, TypeScript, Ruby, Unix Shell
Databases: Postgres, Neo4j, MongoDB, Redis, MySQL, Sqlite
Haskell Tools: Nix, Ghcid, IHP, Servant, Aeson, Lens, MTL, HSpec, QuickCheck, Scotty
Python Tools: Numpy, Pandas, Scikit-learn, TensorFlow, Torch, Keras, Flask, Jupyter Notebooks
Technologies: Machine Learning, NLP, LLMs, Functional Programming, Web Development

EXPERIENCE

Tontine Trust   Miami Beach, FL (Remote)
Haskell Software Engineer / Quantitative Analyst   Nov 2023 – Apr 2024
- Developed financial actuarial models for a tontine, a new retirement product.
- Developed quantitative finance forecasts and simulations in Haskell for robo-actuary software.
- Skills: Haskell, Functional Programming, Quantitative Finance, Forecasting, Simulations, Statistics, Nix, Julia, Python, Spreadsheets.

Independent Study   Miami Beach, FL
AI Research Engineer   Feb 2023 – Nov 2023
- Studied generative AI and LLMs using GPT-4 and OpenAI API.
- Completed NLP specialization from DeepLearning.AI.
- Skills: Generative AI, LLMs, NLP, RAG, Python, Haskell, Julia, Javascript, OpenAI API.

NFTYEA   Miami Beach, FL
CTO / Co-founder   Jan 2022 – Jan 2023
- Built GPT-3-based crypto news summarizer for investors.
- Managed team of frontend devs, took app from idea to production.
- Skills: Haskell, IHP, JavaScript, Python, Julia, OpenAI, Web3.

Capital One   San Francisco, CA (Remote)
Master Software Engineer   2018 – 2021
- Built Haskell simulation engine for synthetic data generation.
- Designed agent-based models using probabilistic monads and custom simulation monad.
- Mentored Haskell developers, wrote static analysis tools, and helped build API infrastructure.
- Skills: Haskell, Functional Programming, Python, AWS, Agent-Based Models, Probabilistic Programming.

Gumroad San Francisco, CA
Machine Learning Engineer 2015 – 2016
- Built ML pipeline for risk scoring and fraud detection.
- Skills: Python, Ruby, ML, Numpy, Pandas, Scikit-learn.

CollabRx San Francisco, CA
Software Architect 2016 – 2017
- Built a knowledge graph for cancer treatments based on genetic data.
- Skills: Elixir, Neo4j, Graph Theory, Biology, Bioinformatics.

Liquid Labs (Now Gigster) San Francisco, CA
CTO / Co-founder 2013 – 2014
- Led rapid prototyping for startup ideas.
- Projects included a contact manager, WebRTC video chat, experts exchange, and a stock market game.

Tapjoy San Francisco, CA
Senior Software Engineer / Data Scientist 2012 – 2013
- Built collaborative filtering recommendation system and an A/B testing platform.
- Tools used: Octave, R, Ruby.

Kabam San Francisco, CA
Lead Backend Engineer 2011 – 2012
- Developed backend game server code for Dragons of Atlantis.
- Maintained and scaled backend for Dragons of Atlantis (500k DAU, 4M MAU).
- Skills: Ruby, Rails, Redis, MySQL.

Biemedia Denver, CO
Senior Software Engineer 2009 – 2010
- Built systems for scraping, automation, video generation, and search in Ruby.

Mercurio Marketing LLC Denver, CO
Owner / President / CEO 2008 – 2010
- Software development and consulting services.
- Management of modeling agency, production of rock en español concerts, and nightclub events.

Inspekt Security Denver, CO
Principal Scientist 2007 – 2008
- Built statistical pattern recognition software for intrusion detection using Ruby and R.

Collective Intellect Denver, CO
Director of Research / Cofounder 2005 – 2006
- Developed ML/NLP software to extract sentiment, detect topics, and identify influencers.
- Tools: Ruby, Python, R.

Dante Group / WebMethods Denver, CO
Senior Software Engineer 2002 – 2005
- Built statistical anomaly detection and OLAP engines in Java and Python for BI monitoring.

Quark Denver, CO
Product Manager 1999 – 2000
- Led personalization tech project with a small team. Filed a patent on the technology.

MicroStrategy Falls Church, VA
Associate 1997 – 1999
- Completed 6-week SQL/Data Warehousing bootcamp. Rotated through marketing, PM, and web dev.

First Quadrant   Pasadena, CA

Equity Research Assistant   Summer 1995, 1996–1997 – 1999

- Created computational finance models.
- Wrote genetic algorithms in C++.
- Skills: C++, Perl, Genetic Algorithms

EDUCATION

California Institute Of Technology   Pasadena, CA

B.S. Double Major - (1) Engineering & Applied Science, (2) Economics   1992 – 1996

- Emphasis in physics, applied math, computer science, and quantitative finance.
- Coursework included: classical/statistical/quantum mechanics, relativity, signal processing, stochastic calculus, econometrics, game theory, and more.
- Research: molecular dynamics in C (physics dept), genetic algorithms in C++ (econ internship).

ITESM   Monterrey, NL, Mexico

M.S. Computer Science, Intelligent Systems   2000 – 2002

- Practical AI program with courses in Bayesian networks, RL, fuzzy logic, expert systems, etc.
- Published paper: "Biometrics and Data Mining..." in Springer's MICAI 2002 proceedings.

University Of Colorado Denver   Denver, CO

M.S. Applied Math Classes, Computational Biology Certification   2004 – 2010

- Cross-disciplinary program in applied math, computational biology, and statistics.
- Coursework included Bayesian statistics, graph theory, stochastic processes, info theory, and bioinformatics.
- Class projects built using R, Python, Octave, and Matlab.

CERTIFICATIONS

Deep Learning Specialization   Issued Apr 2018

Coursera, DeepLearning.AI   2017 - 2018

- Neural Networks and Deep Learning (Sep 2017)
- Improving Deep Neural Nets: Hyperparameter Tuning, Regularization and Optimization (Sep 2017)
- Structuring Machine Learning Projects (Oct 2017)
- Convolutional Neural Networks (Feb 2018)
- Sequence Models (Apr 2018)

Natural Language Processing Specialization   In Progress

Coursera, DeepLearning.AI   2023 - Present

- NLP with Classification and Vector Spaces (Apr 2023)
- NLP with Probabilistic Models (Jul 2023)
- NLP with Sequence Models (In Progress)
- NLP with Attention Models (In Progress)
- Generative AI with Large Language Models (In Progress)

HOBBIES AND INTERESTS

- Trading options on stocks and futures (Tastytrade)
- Quantitative Finance — reading Steven Shreve's *Stochastic Calculus for Finance*
- LLMs, building custom GPTs, and exploring AI technologies
- Bitcoin, crypto, and Decentralized Finance

- Learning modern web development (Deno, Fresh, iOS apps)
- Coding in Haskell, Python, Julia, and Typescript
- Lifting weights, martial arts, and fitness
- Learning languages — currently Chinese, Latin, Swift, and Rust