

FRANCISCO GUTIERREZ

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SUMMARY

AI systems engineer with 15+ years building backend systems, machine learning tools, and simulation platforms. Background spanning machine learning, finance, probabilistic modeling, and functional programming. Founder of Miami Beach Labs, developing experimental LLM-driven systems and AI tools.

RECENT EXPERIENCE

Miami Beach Labs (miamibeachlabs.com), Founder, Jun 2025–Present

- Developing experimental AI-native applications powered by large language models.
- Building internal GPT-style tools for research, coding assistance, and rapid AI prototyping.
- Prototyping LLM systems and developer tools in Haskell, Python, Swift, and JavaScript.

Independent Options Trading, Apr 2024–Jun 2025

- Quantitative research in volatility, stochastic calculus, and financial engineering while trading options.

Tontine Trust, Haskell Quantitative Engineer, Nov 2023–Apr 2024

- Developed financial simulations and forecasting tools in Haskell for a novel retirement product.
- Authored a composable DSL using RWST monads to express financial logic declaratively.
- Contributed to robo-actuary engine; integrated Haskell models with Julia and Python components.
- Tools: Haskell, Nix, Python, Julia, Spreadsheets, Statistics

NFTYEA, CTO / Co-founder, Jan 2022–Jan 2023

- Built crypto intelligence platform using GPT-3 for summarizing market signals.
- Architected Haskell web app (IHP) and managed frontend development.
- Tools: Haskell (IHP), Nix, OpenAI API, AWS, JavaScript

Capital One, Master Software Engineer, Apr 2018–Jul 2021

- Led development of Haskell-based simulation engine for generating synthetic financial datasets.
- Designed agent-based models using probabilistic monads and custom simulation frameworks.
- Collaborated with internal economist to simulate macro shocks and recession effects on credit portfolios.
- Mentored Haskell engineers, promoted FP internally, and wrote static analysis tooling.
- Filed five patents related to agent-based modeling and synthetic data.

EDUCATION

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

- Double major with emphasis in applied math, physics, computer science, and quantitative finance.
- Research: molecular dynamics in C (physics dept) and genetic algorithms in C++ (econ internship).

ITESM, M.S. Intelligent Systems, 2000–2002

- Broad foundation on AI. Topics included neural nets, Bayesian nets, genetic algorithms, fuzzy logic, decision trees, robotics, expert systems, search, and algorithms.

CU Denver, Graduate Coursework in Applied Math, 2004–2010

- Topics included stochastic processes, information theory, probability theory, Bayesian statistics, graph theory, linear algebra, and bioinformatics.

EARLIER EXPERIENCE

CollabRx, Software Architect, 2016 - 2017

- Designed and developed knowledge database for precision medicine cancer treatment recommendations.
- Developed using Python, graph database Neo4j, functional language Elixir, and Phoenix web framework.

Gumroad, Machine Learning Engineer, 2015 - 2016

- Main developer and maintainer of machine learning application for risk scoring and fraud detection.
- Developed using Python, Scikit-learn, Pandas, Numpy, Jupyter, and Flask.

Liquid Labs (now Gigster), Co-Founder / CTO, 2012 - 2014

- Main developer for all our early ideas in fast idea prototype cycle.
- Built and launched rapid prototypes, including a stock market game and expert Q&A platform.

Tapjoy, Data Scientist, 2011 - 2012

- Developed collaborative filtering model to recommend mobile apps, and an A/B testing framework.
- Developed with Python, Octave, R, Hadoop, Pig, Hive, Ruby and Rails.

Kabam, Software Engineer, 2011

- Lead backend engineer for fast growing online game, developed with Ruby, Rails, MySQL, and Redis.

Biemedia, Senior Software Engineer, 2009 - 2010

- Built Ruby-based systems for scraping, automation, search, and video generation.

Mercurio Marketing, Founder, 2008 - 2010

- Software development and consulting services.

Inspekt Security, Principal Scientist, 2007 - 2008

- Built statistical pattern recognition tools for intrusion detection using Ruby and R.

Collective Intellect, Director of Research / Co-founder, 2005 - 2006

- Developed ML/NLP tools to extract sentiment, detect topics, and identify influencers.

Dante Group / WebMethods, Senior Software Engineer, 2002 - 2005

- Built statistical anomaly detection and OLAP engines in Java and Python.
- Designed backend tools for business intelligence and real-time monitoring.

Quark, Product Manager, 1999 - 2000

- Led personalization technology project, filed a patent on adaptive content delivery.

MicroStrategy, Associate, 1997 - 1999

- Rotated through marketing, PM, and dev after completing a 6-week SQL/data bootcamp.

First Quadrant, Equity Research Assistant, 1995, 1996 - 1997

- Created computational finance models using C++ and Perl.
- Developed genetic algorithms for asset allocation and strategy optimization.