

Emmanuel Byrd

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Technically astute and solutions-oriented professional with an outstanding track in web, ML, and cloud design and deployment. A conference speaker and champion swimmer at the forefront of technology with multiple published scientific contributions and a proven success as the leader of technical teams.

Work Experience

Web Solutions Engineer | Adecco, at Google.

May 2024 - present

Designing and developing backend microservices in **Go**. Implementing large scale features for millions of users.

- Engineered a pagination framework, raising the row limit from **150k to 1 million**, and improving reliability.
- Designed a concurrent access system to manage exclusive resource locks, achieving a **10x improvement** in request handling efficiency.
- Implemented caching systems for high-traffic endpoints, reducing latency from seconds to **milliseconds**.

Co-Founder & CTO | Agave Networks.

Dec 2021 - May 2024

Co-designed the business model, understood customer challenges and designed technological solutions for our B2B surplus marketplace to make international transactions convenient.

- Won a **£49,000 grant** by Innovate UK, and built a Computer Vision feature to analyse scrap metal pictures.
- Built and **deployed** the [MVP](#) from scratch with Go, Typescript, Python, Terraform, gRPC and GCloud.

Senior Software Engineer | 8th Light.

Oct 2021 - Jul 2023

Full-Stack development of greenfield and legacy codebases. [Author of technical articles](#). **Exceeded Expectations**.

- Improved a cascade caching system, reducing load to Redis in **80%** and improving service rate **7x**.
- **Tech lead** of the UK team for a greenfield Web3+Web2 content streaming platform. Built the cloud infrastructure with **GCloud**, **Terraform** and **Docker**; and the services with NextJS, NestJS, and GraphQL.
- Identified and fixed dangerous bugs in the transaction's **Ledger** of a large **crypto exchange** in **Golang**.

Senior Software Engineer | Nexu, Mexico.

Jun 2017 - Aug 2019

Digital financial services for online leasing. Developed the backend with Ruby on Rails.

- Built an automatic payments parser and consolidator, reducing processing time from **1 day** to **5 minutes**.
- Built a real-time lead prioritisation [using a queue system](#) with Action Cable.
- Built an automatic custom PDF generator of legal contracts, reducing the task time from **hours** to **seconds**.

Skills

PyTorch | Pandas | SciKit Learn | Python | Go | Terraform | GitHub | CI/CD | Docker | GCloud | TypeScript

Education

Master of Science in Computer Science | University Tecnológico de Monterrey. **2021**

Computer Vision and Pattern Recognition Workshop **2021**

Published the [extended abstract](#) "ActivityNet and OSCAR: an Image Captioning model can effectively learn a Video Captioning dataset". Performed SotA research, experiment design, data preprocessing, augmentation, training, and evaluation. Written in Python with NLP, Computer Vision, **BERT** and **PyTorch**.

19th Mexican International Conference of Artificial Intelligence **2020**

Published the [conference paper](#) "Exploitation of Deaths Registry in Mexico to Estimate the Total Deaths by Influenza virus: a Preparation to Estimate the Advancement of COVID-19", using data cleaning, preprocessing and linear regression for time series forecast. Presented in an event with over **900** total registered attendees. Published by Springer in *Lecture Notes in Computer Science*. Written in Python with **Pandas**, **Numpy** and **Scikit-learn**. [Available on Github](#).

Bachelor of Science in Computer Science and Engineering | University Tecnológico de Monterrey. **2017**

Real-Time Cloth Simulation **2017**

Coded in **C++** using a Mass-Spring System and Verlet integration. Included wind, gravity, collision, camera movements and Phong Illumination. **Parallel GPU** computing using transform feedback. Selected the [gold standard project](#) of the course for two consecutive years.

Int64 Compiler **2017**

Coded a compiler with Lexical, Syntactic and Semantic Analysis that compiled to Assembly. Included a function stack, hoisting, variables scope, flow controls and string representations in 64-bit integers. Written in **C#**. [Available in GitHub](#).

12th National Colloquium of Codes Cryptography and Related Areas, Mexico **2017**

Researched and [presented the conference](#) "The Importance of Pseudo-Random Numbers in the Generation of Cryptographic Keys" to an audience of **50** people. Mentioning the history and vulnerability of the DUAL_EC_PRNG pseudo-random number generation algorithm.

LVIII National Congress of Physics, Mexico. **2015**

Published the poster "Generation of a GUI in MATLAB to study heat conduction in a one-dimensional bar". The work illustrates heat conduction simulation in a one-dimensional bar in **MATLAB**, using **finite differences**, using the methods of Explicit Euler, Implicit Euler and Runge-Kutta; and the boundary conditions needed for the simulation to converge [register number 0860, poster 4MF33].

Personal Projects

Quantitative Finance, Self Studies **August 2024-present**

Exploring financial concepts like futures, options, interest rates, and portfolio optimization, and applying techniques such as PCA, autocorrelation, and Black-Scholes modeling. Strengthening skills in linear algebra, probability, statistics, and calculus, alongside **memory and time efficient programming** and data processing techniques. Applying **Machine Learning** models, CNNs, LSTMs, and Transformers, to financial data, developing trading bot prototypes for forex markets. **Python, PyTorch**.

ETH Mexico, Mexico City **2022**

Participated in ETHMexico building [Mixdown](#) on top of the Lens Protocol (Web3/Blockchain). Our dApp won two **first prizes** in the hackathon: best audio dApp for Lens, and best use of IPFS/Filecoin, worth a total prize of **\$7000** USD. Used Vite, RainbowKit, Tailwind, Vercel, IPFS and crunker.

[Ruby Gem: szymanskis_mutex](#), **+52,000** downloads

[Active Record contributor \(Ruby on Rails\)](#)

[ML repository](#): **Deep QLearning**, CV and other gists.

Real-time [crypto arbitrage bot](#) in Golang.