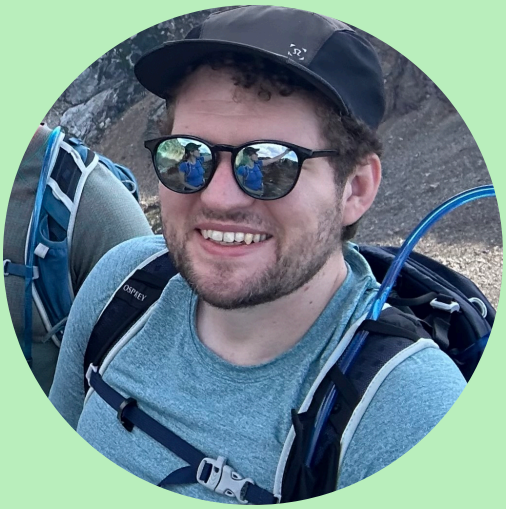

Paul McInnis

Full-Stack, Web3, ML

Email Linkedin Github Music

About Me

I build, I optimize, I scale. Whether it's a high-throughput crypto exchange, an AI-driven analytics engine, or a decentralized gaming ecosystem, I thrive on architecting systems that push boundaries. My expertise spans full-stack development, machine learning, and distributed systems, with a knack for turning complex ideas into rock-solid, scalable solutions.

In crypto, I've led engineering teams that built and scaled DeFi platforms handling billions in trading volume, developed NFT marketplaces connecting digital and physical assets, and designed high-performance L1/L2 integrations. In AI, I've developed explainability tools for neural networks, designed, trained, and deployed custom models, and I have deep experience turning POCs or research into production-ready inference pipelines.

I thrive in **high-impact** roles where I can lead teams, refine architecture, and drive technical vision. If you're looking for someone who can navigate blockchain, AI, and large-scale infrastructure, let's connect.

Experience

Guardrail.ai

March 2025 → Present

Founding Software Developer

- Built Response Actions, enabling automated on-chain execution in response to security guard alerts
- Built a Transaction Screening service for pre-signing transaction validation via Fireblocks and API, with transaction simulation and webhook-based customer onboarding
- Designed and launched DIY Guards, a Python-native custom guard system, in ~2 months, directly winning business from competitors
- Prototyped and validated the DIY Guards design with a launch customer within 1 month
- Built an AI-powered code writing assistant for DIY Guards and authored all documentation
- Researched, designed, and shipped an AI/ML-powered Suspicious Transaction guard in 1.5 months with zero sev0 issues at launch
- Suspicious Transaction guard reached 30% of all guard invocations at only 12% of execution time within two weeks, driving 3-4 high-value client sign-ons

Python FastAPI SQLAlchemy PostgreSQL TimescaleDB Redis Docker GCP Machine Learning AI Blockchain Security Solidity Web3 Pydantic Alembic

Hypotenuse Labs

November 2021 → February 2025

Senior, Staff Software Developer

- Delivering web2&3 projects for our hype clients as a full-service software consultancy
- Leading agile, full-stack web teams of 3-10 people in size
- Roadmapping customer requirements and delivering on-time
- Integrating web3 smart contracts into web2 frontends

- Developing and improving machine learning services
- Delivered essential software for 3 decentralized crypto exchanges
- Planned and executed delivery for multiple key projects, including the two largest at Hypotenuse (Ambient and Highstreet)
- Wrote marketing material and fine-tuned pitches for clients
- Delivered constructive feedback to clients
- Helped Ambient Finance surpass $100M in TVL, supporting over $2.5B in trading volume and $4.25M in generated fees within months of launch.
- Launched Berachain, a novel L1 on Ethereum
- Delivered a Phygital goods marketplace for Highstreet Market
- Launched a token on Blast with the DN404 standard (see similar ERC404 standard)
- Wrote core AMM smart contracts within a fork of Uniswap v3 with updated pool tick math to price assets using correlations to Pyth oracles
- Conducted exploratory R&D solving an attribute-matching and scraping problem
- Designed and built a slack-bot with integration into sales CRM and billing systems
- Introduced engineering best practices to improve efficiency and team coordination during a multi-country launch of a social media app.

Web3 React NextJS NodeJS NestJS TypeScript Python Solidity GraphQL PostgreSQL MongoDB Redis Docker Kubernetes AWS GCP DeFi NFTs Uniswap Balancer Hardhat Viem Machine Learning

DarwinAI

October 2018 → November 2021

Senior Platform Developer

- Developed a quantitative explainability (XAI) tool for object detection networks
- Assisted with research and development problems central to GenSynth core-IP
- Delivered networks with groundbreaking performance improvements
- Low-level Tensorflow development and modification in-support of graph manipulation
- Research and development work for purposes of improving platform capabilities
- Catching and squashing complex bugs within our core IP implementation
- Participated in COVID-Net initiative, a tool for identifying and quantifying COVID-19 infections within a chest X-Ray
- Experience quantizing models for embedded deployment, including TPU accelerators.

Explainability TensorFlow Python Keras PyTorch SQL MPI CUDA TensorFlowLite REST Coral

Rave Inc

September 2017 → November 2018

Software Developer (AI)

- Development in support of RaveDJ, an A.I. DJ web-app
- Designed a novel, state-of-the-art, neural network for song structural analysis
- Music Information Retrieval (MIR) research in support of automated A.I. DJ app
- Applied data science to quantify neural network performance in the product
- Managed an annotation framework, training annotators and building parser tools
- Deployed scalable inference and training APIs in Docker on Google Cloud
- Worked with expert DJs to distill and technically define AI model heuristics

TensorFlow Python Kubernetes C MIR Dev-Ops Data Science Google Cloud

UWAFT

August 2015 → August 2017

Engineering Manager

- Responsible for Innovation and Electrical sub-teams
- Advanced Vehicle Technology Competition (AVTC) for the conversion of a Camaro into a hybrid sports car
- Engineering work in support of novel powertrain design, controls and simulation
- Development of hardware and software platform for training object detection and tracking algorithms with Waterloo's autonomous vehicle research group
- Design and implementation of all high and low-voltage subsystems including fusing
- Responsible for numerous high-pressure, techical public speaking presentations

CANBus FEM NX Altium Simulation HV AVTC Object Tracking

Projects

Berachain

October 2024 → March 2025

- Integrated the v2 Balancer DEX into the Berachain ecosystem as the BEX
- Debugged and resolved issues within the pre-release Balancer API
- Implemented swap and pool create pages in the Berachain BEX
- Integration and testing for updates to pool create contracts to enable single-tx joins
- Ended a 4 month engagement as #2 contributor to the Berachain FE codebase

Ethereum Balancer React NodeJS NextJS Tailwind PostHog GraphQL IPFS ERC-20 Viem Wagmi Vercel

Kaidro

March 2024 → October 2024

- Led the web team through Kaidro's major launches, including NFT mints, airdrops, and Play-to-Airdrop (P2A) campaigns.
- Built and scaled web infrastructure to support 340,000+ Journal NFT mints and thousands of concurrent users around the world
- Developed and optimized core web features for Spark Suit NFTs, Synergy lockups, and interactive user engagement tools.
- Oversaw delivery of the Spin to Win web app with a three week turnaround
- Integrated game authentication and account linking for Kaidro: Clan Battles Alpha playtests.
- Architected and delivered event-driven queueing systems for tracking and rewarding player activity in real-time.
- Executed high-velocity releases on tight deadlines, aligning with crypto market trends to maximize impact.
- Grew the engagement from 2-4 people to support launch deadlines
- Wrote and deployed smart contracts and managed on-chain infra

Gaming ERC-721 AWS React NodeJS NextJS Tailwind Retool GraphQL

PostgreSQL Subsquid Postman Docker Ronin Hardhat Foundry Viem Wagmi Vercel BullMQ

Fractionalized NFT on Blast

March 2024

- Launched a token on Blast with the DN-404 standard
- Delivered a client-side-only frontend and minting page in 2 weeks

DN-404 Blast React Vercel Metamask

Novel L2 with Asset-Price Pegging

December 2023 → March 2024

- Wrote core AMM smart contracts within a fork of Uniswap v3 with updated pool tick math to price assets using correlations to Pyth oracles
- Setup an indexing service to feed FE graphs and plots
- Setup basic infrastructure to verify and test AMM functionality
- Deployment scripting and testnet/mainnet deployment of all core contracts

Layer 2 AMM Solidity Hardhat Uniswap Smart Contracts

Supply Chain Optimization Company

September 2023 → October 2023

- Conducted exploratory R&D solving an attribute-matching and scraping problem.
- Distilled and presented findings weekly to non-technical stakeholders.
- Advised the client on future steps and delivered clearly-documented Jupyter notebooks with well-formed heuristics for the problem.

Supply Chain R&D Scraping Jupyter Hugging Face PyTorch Python Anomaly Detection Data Science

B2B Company with Internal Tooling

August 2023 → September 2023

- Designed and built a Slack bot with integration into sales CRM and billing systems.
- Implemented a design which satisfied client requirements despite API limitations.

B2B Slack CRM Banking Automation Process Definition

Ambient Finance

March 2023 → August 2023

- Led frontend modernization efforts, ensuring a smooth and responsive user experience.
- Refactored and optimized the frontend (Context API, UI/UX revamp) to improve maintainability and speed.
- Identified and helped resolve critical scalability issues, de-risking the launch by improving indexing and chat functions
- Contributed to onboarding documentation and codebase improvements, enhancing developer experience.
- Helped Ambient Finance surpass $100M in TVL, supporting over $2.5B in trading volume and $4.25M in generated fees within months of launch.
- Grew the engagement to Hypotenuse's largest with 6 engineers pre-launch.

DEX Ethereum Liquidity Scalability React NodeJS NextJS Tailwind GraphQL PostgreSQL Python Go Server Sent Events

Social Media App

December 2022 → March 2023

- Developed backend features to support a scalable social media event feed with swiping.
- Audited and documented the codebase, improving developer onboarding and maintainability.
- Enhanced event scoring mechanisms, fixing broken components and introducing novel inter-user-ranking improvements.
- Built a self-serve portal for the product and operations teams to fine-tune the event feed algorithm and view metrics.
- Laid the foundation for future ML features by logging critical scoring data and user interactions.
- Led client interactions and scoped engineering work for myself and another developer.
- Introduced engineering best practices to improve efficiency and team coordination during a multi-country launch.

Social Media Jupyter Architecture MongoDB Node Typescript NestJS GCP Backend Scalability Machine Learning Event Feed

Highstreet Market

November 2021 → September 2022

- Led a team of 2-4 developers, delivering core infrastructure for Highstreet's Web3 marketplace.
- Built a marketplace and multi-checkout system on the ERC-1155 NFT protocol to support phygital goods.
- Launched three NFT series, including Animoca's virtual real estate and furniture offerings.
- Developed systems to mint and link NFTs to physical goods, bridging digital and real-world assets.
- Created a multi-SSO authentication system, allowing non-Web3 users to access the ecosystem.
- Implemented an on-chain staking and rewards system for Highstreet NFTs, enhancing engagement and utility.

NFTs ERC-721 Marketplace Web3 ERC-1155 Authentication React Typescript Tailwind Phygital Goods SSO Staking

JobFunnel

2019 → Present

- Created an open-source job aggregation tool to streamline job searches with over 2000 stars and 230 forks at the time of writing.
- Developed a web scraper that gathers job postings from multiple job boards.
- Implemented deduplication, filtering, and blocking features to improve job search efficiency.
- Supports job searching automation with CLI-based functionality.
- Maintained and improved the project with community contributions.

Python Web Scraping Automation Open Source Data Parsing BeautifulSoup Selenium Requests Data Filtering

Education

University of Waterloo Ontario

Ba.Sc Mechanical and Mechatronics Engineering (2010 - 2015)

- Co-op program
- University of Waterloo Merit Scholarship
- Undergraduate Student Research Award, Natural Sciences and Engineering Research Council of Canada (NSERC)
- Final-year project: AWD, winterized, E-Bike (Frost-E-Bike)

Ma.Sc Mechanical and Mechatronics Engineering (2015 - 2017)

- Hybrid powertrain research and development
- Advanced Driver Assistance Systems (ADAS) research and development
- In partnership with the EcoCar Advanced Vehicle Technology Competition (AVTC)
- Thesis: Intelligent Vehicle Development through Scalable Data Collection Processes and Simulation

Publications

2021 - Fibrosis-Net: A Tailored Deep Convolutional Neural Network Design for Prediction of Pulmonary Fibrosis Progression From Chest CT Images

Alexander Wong, Jack Lu, Adam Dorfman, Paul McInnis, Mahmoud Famouri, Daniel Manary, James Ren Hou Lee, and Michael Lynch.

2021 - Insights into Data through Model Behaviour: An Explainability-driven Strategy for Data Auditing for Responsible Computer Vision

Applications
Alexander Wong, Adam Dorfman, Paul McInnis, and Hayden Gunraj.

2017 - Inadequacy of Current Pediatric Epinephrine Autoinjector Needle Length for Use in Infants and Toddlers
Harold Kim, Chitra Dinakar, Paul McInnis, Dan Rudin, Xavier Benain, William Daley, Elke Platz.

2017 - Comparative Safety Risk and the Use of Repurposed EV Batteries for Stationary Energy Storage
John Catton, Sean B. Walker, Paul McInnis, Michael Fowler, Roydon Fraser, Steven B. Young, Ben Gaffney.

2016 - System and Device for Management of Medication Delivery Devices
Michael Fisher, Alexander Leyn, Richard Edwards, Steven Orzel, Erik Helge Borg, Paul McInnis, Cristian Cherler, Heinz Wolter, John Chinnick, Jacob Stahlbaum.

Contact

EMAIL

LINKEDIN

GITHUB