

PAUL OSETINSKY

pauloetinsky.com | p.osetinsky@gmail.com | [917-376-5061](tel:917-376-5061)

Experienced software engineer specializing in backend systems for creative media applications. Demonstrated expertise in managing the software development lifecycle for large-scale, complex projects in games, video, fintech, and crypto. Currently seeking innovative audio/visual projects utilizing AI to advance creativity and empower builders.

Highlights

- Led backend teams in building microservices/ML infra for games with millions of players
- Projects: AI word games; beatmatched audio/video syncing; real-time audio synthesis, streaming, and control via WebRTC; custom-trained GANs for blockchain pixel art
- M.A. in computer music; developed novel synthesis technique around signal separation
- Co-created NFT collection with 1,800 ETH in volume; wrote smart contracts and art algos
- Designed, built, and shipped backend/infra for complex tax tracking app, from scratch
- Excellent writer: documentation for async collaboration, essays, LLM prompt engineering
- Humble team player driven to learn, collaborate, and lead through the innovation process

Recent Experience (New York, NY)

1,989 Sisters

Co-creator | Aug. 2021 – Present

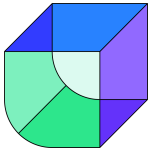


NFT [collection](#) in collaboration with fashion artist Blair Breitenstein. Our collection is unique in how it exhibits close collaboration between artist and engineer to arrange dozens of hand-drawn assets into hundreds of pieces of digital collage. *1,989 Sisters* attracted [celebrity](#) buyers, was featured by OpenSea, and has reached over 1,800 ETH in total sales.

- Rapidly learned Solidity to write code for [smart contracts](#) under tight deadlines; built ingestion and tagging systems for digitized paintings; designed algorithms for generative art with nuanced rules for layering specific assets in visually compatible ways; devised trait rarity distribution; wrote scripts for structuring and uploading metadata to [IPFS](#)
- Significant testing of (a) art algorithms to ensure artistic quality, uniqueness of traits, and validity of metadata; and (b) smart contracts through local unit tests and deployed integration tests on Rinkeby testnet and various NFT marketplaces
- Utilized factory patterns and [lazy minting](#) to enable bundled NFT purchases and defer minting costs to buyers at time of sale. This approach saved our self-funded team ~\$100k in upfront gas fees and made the project financially feasible
- [Contributed](#) to Manifold Royalty Registry to support royalty distributions to EOAs proving indirect ownership of tokens through direct ownership of factory contract addresses
- Toolkit: Solidity, Ruby, Shell, JavaScript/Truffle, IPFS, Piñata, OpenSea

Upward

Founding CTO | Feb. 2021 – Feb. 2024



Upward was a tax tracking iOS app that targeted the growing number of U.S. *multi-earners*: people with multiple streams of income. After I did some initial consulting for the CEO, he invited me to build out the product. Despite our best efforts, Upward failed to gain enough traction and shut down in February 2024.

The Problem

It's frustratingly difficult to project how much you'll owe in taxes throughout the year. This is especially true if you have investment or self-employment income, both of which are moving targets. This uncertainty makes it virtually impossible for taxpayers to plan, save, and minimize their tax liabilities. Upward aimed to solve this problem by providing users with features to sync financial accounts and track their income, surface deductions, and receive real-time tax calculations down to the individual transaction level.

Technical Work

- Architected, built, tested, and shipped all backend services; emphasized thorough [designs](#) and documentation to reach agreement with the team and avoid costly mistakes
- Features: authentication (Apple ID, Email); [Plaid](#) integrations/webhooks for account syncing, error handling, and event-triggered transaction imports; subscription payments (and cancellations), transaction categorization, user-defined rules for auto-categorizing transactions, tax calculations for W2, 1099, and investment income (cap gains, interest, dividends); session-aware push notifs (FCM); search/filtering of transactions; user metrics
- Infrastructure: ECS for multi-container services, ECR for registering Docker containers; EC2 web and worker instances; SQS queues for long-running account syncing jobs; RDS for PostgreSQL database; ElasticBeanstalk with [best-practice](#) orchestration of services
- Utilized [DBSCAN](#) for clustering noisy transactions by counterparty to facilitate bulk user modifications; LLMs to make messy data human-readable ([scrubadub](#) to strip PII)
- Backend: Ruby (core business logic), Python (data clustering algorithms)
- CI/CD: AWS CLI (ECR, ECS, EB), Fastlane, TestFlight, Github Actions
- Monitoring & Instrumentation: New Relic, Sentry, CloudWatch, PagerDuty

Leadership

- Built and led a small, distributed team of iOS engineers, brand experts, and designers; daily standups, sprints, code reviews, pair programming, and project management
- Worked closely with the CEO to develop a sufficient understanding of the tax code in order to write sound API business logic, intuitive UI copy, and [branding](#) material
- Eventually took on the majority of UI/UX design work. Learned [Figma](#) and rudimentary design principles, creating realistic prototypes for the CEO and test users, as well as implementable frontend deliverables for iOS and QA engineers

Dots



Acquired by Take-Two in 2020, Dots made beautiful puzzle games played by millions. I initially focused on backend and infrastructure for their flagship game [Two Dots](#) before leading the development of a game-agnostic suite of microservices and ML pipelines. Prototyped backends for several of the studio's exploratory multiplayer games, my own real-time variant of tic-tac-toe, and read research [papers](#) to inform GAN experiments for generative puzzle creation.

Staff Engineer | Jul. 2020 – Dec. 2020

ML Systems

- Worked closely with the data team to design, build, and ship production systems that utilized ML models for predicting user churn and spend likelihood (random forest classifiers). Predictions were primarily used to adjust the frequency of advertisements displayed to players (low churn probability, more ads; high spend probability, less ads). Upon deployment, these services increased revenues by ~\$60k/mo.
- The prediction service accepted player IDs that were queued in nightly background jobs that made the predictions. Worker instances used these IDs to query analytics datastores for player attributes that were passed as payloads via local POST requests to the respective churn and spend model servers. These models were served from separate containers within the same ECS cluster as the worker instances, and the predictions were stored for future retrieval and responses from game-facing APIs.
- Python (Flask), ElasticBeanstalk, S3, ECS, SQS, EC2 (web/worker), Docker, [SageMaker](#)

Game/Admin Microservices

- Led development of a large suite of microservices powering production and experimental games. Services included containerized API gateways (public/admin), internal APIs powering admin dashboards, and game-facing APIs for player accounts, wallets, leaderboards, inventory catalogs, segmentation (experimentation/skill-based placements for multiplayer modes), live events and experiments, and data/analytics pipelines.
- Python (Falcon), Protobufs, PostgreSQL, Redis (ElastiCache), Kafka, Kubernetes

Senior Backend Engineer | Jul. 2017 – Jul. 2020

- Built well-tested APIs for new game features in Two Dots; on-call duty to fix rare fires
- Refactored much of the monolithic Ruby/Rails application to improve uptime and reduce latency by 10x (~250ms to 25ms) while throughput tripled (~25k rpm to 75k rpm)

Past Experience

VHX (acquired by Vimeo) | Senior Backend Engineer | Dec. 2015 – Jul. 2017 | New York, NY

Treatings | Co-founder & CTO | Mar. 2012 – Nov. 2015 | New York, NY

BlackRock | Analyst | Sep. 2010 – Mar. 2012 | New York, NY

Lombard Odier | Intern | Summer 2008 | Geneva, Switzerland

World Health Organization | Intern | Spring 2007 | Geneva, Switzerland

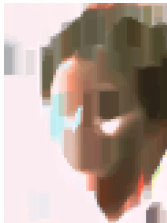
Selected Projects

Riddler



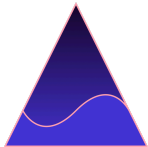
Not just another Wordle clone, [Riddler](#) is an autonomous word game that uses AIs to craft its own daily puzzles and clues. Your task is to reach the bottom of the word ladder using riddle and image hints to modify words, one letter at a time. [Path-finding](#) algorithms, [meta-prompting](#) with LLMs and DALL-E, Node.js, Processing, vanilla JS, HTML, and CSS; AWS EB, ElastiCache, S3, CloudFront.

Fake Fiancé



[Fake Fiancé](#) is an unreleased NFT collection I started in the early days of GANs. I trained [StyleGAN](#) on thousands of photos of my now wife to investigate how ordered pixels, like linguistic units, contribute to the syntax and semantics of visual perception. The project showcases data curation with eye-detection preprocessing, neural network tuning, and pixel rearrangement to oscillate between clear portraits and abstract pixel patterns. OpenCV (eye-detection and cropping), TensorFlow (GANs), ImageMagick (pixel manipulation), Shell, Ruby.

Awestruck



[Awestruck](#) is a model for real-time sound synthesis, streaming, and control over the Internet. Originally inspired by [OpenProcessing](#), I now think that Awestruck has potential for harnessing LLMs to assist in writing synthesis code for a totally different, text-based approach to AI-generative music. Algorithmic music can transcend just bleeps and bleeps: [example](#) (not my own music). Go, SuperCollider, JACK, GStreamer, Pion/WebRTC, and Docker.

VBQ



An experimental [tool](#) for syncing short videos to songs, Video Beat Quantizer (VBQ) has applications for combining separately constructed AI-generated video and audio tracks (Sora, Suno), dynamic soundtracking for targeted video advertisements, and on-the-fly processing for social media content. Python, FFmpeg (video manipulation), Librosa (beat tracking), Shell, and Docker.

Education

Dartmouth College | M.A. in Computer Music | 2008 – 2010

- Received full scholarship and \$30k fellowship for audio research and music composition
- Thesis explored a novel, subtractive synthesis method with audio source separation. The resulting [aural](#) experience is analogous to seeing a blurred image coming into [focus](#).
- Teaching assistant for Music 9 (Music & Technology; Ableton Live and EDM production)

Vanderbilt University | B.Sc. in Economics | 2004 – 2008

- Phi Beta Kappa, Magna cum Laude. Coursework in music, piano performance, and CS
- Teaching assistant for Econ 100 (Macro) and Econ 101 (Micro)