Zac Stewart

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Goals & Areas of Interest

I'm interested in machine learning, computer vision, distributed computing, and peer-to-peer systems. I enjoy working on all kinds of problems, but I usually find my way to the ones that can't be solved by a CRUD web app. More than tech for its own sake, I care about creating humane tech. The people that create it, the people that use it, and the impact it has on society is more important than its technical merit.

Experience

Lead Software Engineer, Salesforce.com, Atlanta, GA

2017 – 2020

I worked on Salesforce Pardot's email team for three years, ensuring we had a world-class email editor and a reliable sending pipeline.

- Designed and lead development of a patent-pending system to remediate the effects of email security scanners on marketing engagement metrics like click-through rates and open rates
  - Took advantage of an internal 48h hackathon to build a working proof-of-concept, pitched to directors and got buy-in from management to prototype it further
  - Researched the problem using statistical analysis on load balancer access logs (Jupyter, pandas)
  - Implemented a Python prototype that could batch-filter problematic requests and backtested it against historical data
  - Designed a synchronous realtime implementation PoC, pitched the project to management, got approval to commit a team to the project and lead development for a release cycle (Go, gRPC, Kubernetes)
  - Brought this new service to production with transparent monitoring, no outages, no degraded performance, no negative technical or customer impacts (Prometheus, Grafana, Kibana)
  - Suppressed millions of bot-originated email open and click activities daily, vastly improving customer engagement metrics and reducing automation churn
  - Took pressure off of our databases and engagement automation systems during bot traffic spikes, reducing outages and on-call incidents
  - Salesforce hired independent counsel to file a patent for this invention, listing me as the sole inventor
- Developed a framework to sandbox WYSIWYG editors, closing numerous XSS vulnerabilities in one swoop
  - Isolated dangerous WYSIWYG component on a content-preview domain to prevent XSS attacks from being able to influence the application
  - Used browser postMessage API to communicate content changes and user actions back and forth across the domain boundary
- Designed and implemented several components of an email templating language renderer, allowing Pardot to adopt a new templating language

- Broke a monolithic pipeline into several phases to parse templates, resolve the requested variables, and render email messages
- Introduced a modular design so that each component could be tested in isolation
- Lead performance testing of these components and implemented several layers of caching in between components to avoid re-parsing redundant portions of template by storing parsed syntax trees in-memory (LRU cache)

Freelance

2015–2017

As a freelance consultant I've worked on several interesting problems.

- Created a machine learning model to route building maintenance work order requests to the correct department.
  - Prototyped it using Scikit-Learn, Pandas, and various other Python tools
  - Cross-validated the model using unseen data to ensure the results were accurate
  - Wrapped it up as a web service and the business put it into a pilot with live customers
- Created a toolset to generate 3D avatars of people using a depth camera
  - Interfaced with the Intel RealSense depth camera driver to record depth frames in real time
  - Created a capture tool to record synchronized depth frames and audio for recording models in a studio environment
  - Built a GUI on top of the capture tool using Qt
  - Created a tool to create a 3D mesh from a capture by stitching depth frames together using an algorithm called iterative closest point
- Authored a Slack addon to enhance a credit card dunning SaaS business (reduces revenue churn from expiring credit cards)
  - Built an OAuth flow to allow a customer to authorize the Slack addon to send notifications
  - Hooked into the existing product's event pipeline to receive notifications for events like credit card expiry and payment details updated by customer
  - Pushed notifications into a user's Slack channel to let them know when their customers' credit cards expire, or when they have updated a payment method

Chief Technology Officer, DirtJockey, Atlanta, GA

2015 – 2017

I lead a team of three developers in building a CRM, inventory management, and advertising automation system for heavy equipment dealers.

- Built a specialized CRM that allows equipment dealers to quickly and intuitively update their inventory, keep track of leads and quotes, publish to advertising sites, and manager their own website
- Automated publishing to industry classified ads sites, allowing our customers to publish their ads to multiple sites without repetitive data entry
- Automated inventory import from multiple data sources, greatly reducing the amount of human intervention necessary
- Fielded support calls from current customers
- Made sales calls to prospective customers
- Set up processes to track KPIs important to our success as a business

Software Developer & Instructor, Big Nerd Ranch, Atlanta, GA

2012 – 2015

- Co-authored a course and guidebook on web development with Ruby called *Ruby on the Server*
- Taught several week-long, intensive bootcamps using the course I co-authored. Received great reviews from students, saying that the course helped them in their career path
- Worked on numerous client projects as a backend software engineer with many happy clients
- Built a machine vision-powered iOS app to digitize crossword puzzles that one third place in a 48-hour hackathon
- Organized the 2013 Space Apps Atlanta hackathon
- Gave several talks at local meetups, including PyATL and the Atlanta Ruby Users group

Software Engineer, Emcien, Atlanta, GA

2011 – 2012

- Designed a Rails backend to provide our patent pattern engine to analysts in different business domains
- Built data visualizations to make sense of complex graph relationships (d3.js, InfoVis, Raphaël, Highcharts)
- Rapidly iterated on a caching scheme to improve performance for very large datasets in time to close an important sales deal

Skills

Languages (Ruby, Python, Rust, Go, JavaScript, Swift, C, C++, Elixir, Java, R, PHP)
Frameworks & Libraries (Scikit-Learn, Pandas, NumPy, SciPy, Flask, Rails, Sinatra, OpenCV, PCL, d3.js, Protocol Buffers, gRPC)
Databases, Etc. (PostgreSQL, Redis, MySQL, MongoDB)
Tools (UNIX, Git, VIM, Jupyter Notebooks, Graphite, Prometheus, Grafana)
Platforms (AWS, Heroku, Digital Ocean, Kubernetes)
Communication (Remote pairing, public speaking, teaching, technical writing)
Methodologies (Object-oriented programming, test-driven development, Agile/lean development)