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Jack Ellenberger

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Education

The University of Chicago — **2016**

Major: Computer Science, B.S.

Minor: Statistics

Courses: Algorithms, Formal Languages, Complexity Theory, Networks and Distributed Systems, Computer Architecture, Compilers, Computer Graphics, Computational Linguistics

Experience

New Relic — Industry leading bservability platform — **2020 - Present**

Senior Software Engineer, Kafka Platform

- Created, maintained, and improved upon monitoring and tooling for managing several massive **Kafka clusters** that are at the heart of the New Relic platform. Helped to scale our system to cope with > **25GB/s** ingest while ensuring minimal latency, solid disaster recovery, and high observability for our dependent teams.
- Helped to automate and parameterize the creation of Kafka clusters in **AWS MSK** to ease horizontal scaling.
- Designed **Kubernetes Custom Resources** and related **Controllers** to allow Kafka topic configurations to be generated, updated, overridden, validated, and destroyed safely, with customizable self service tooling.
- Worked to reduce pager load, formalize runbooks, and standardize tooling across datacenters and cloud providers, reducing toil for our team, and increasing uptime for dependent teams.

Braintree / PayPal — Online payments and digital Commerce platform serving 6+ billion transactions per year — **2016 - 2020**

Software Engineer, Search & Reporting

- Migrated multi-billion document, 100+ node **Elasticsearch** cluster from a local datacenter to the **AWS ES Service** with **0 downtime** or customer impact.
- Upgraded Elasticsearch cluster to be **Active/Active** and **multi-region,** managed via **terraform** for scalability and fault tolerance
- Abstracted **Kafka Streams** pipeline to integrate multiple search applications and sources, including a **Datalake** and **Protobuf**s, removing the need for, and allowing us to decommission, dedicated **Sphinx** services.
- Updated dozens of Health Checks to run in **Kubernetes**, increasing consistency and reducing paging volume across teams.
- Contributed to open source **DataDog** Go SDK and **Terraform** provider to enable feautres for use in monitors and dashboards.
- Created **Spark** based **ETL Pipeline** to power cross region, cross account reporting with guaranteed accuracy.
- Wrote documentation and **Runbooks** to automate common operations, reducing the workload for several teams.

Software Engineer, Docs & Sites

- Optimized site performance and release process via **nginx** caching, **S3** asset storage, **Kubernetes** orchestration, and Jenkins Continuous Integration & Deployment, eliminating downtime.
- Rewrote unified search module using **Algolia** and a custom parser, increasing searchable text by **600%**
- Maintained **full stack** of Braintree and PayPal's highly visible developer documentation and merchant facing websites.

Software Engineer, SDKs

- Worked on in-house DSL to improve **Docker**ized development on **AWS** infrastructure **Jenkins** continuous integration, reducing costs and execution time by more than **85%**
- Integrated a new **GraphQL** backend into existing **Ruby**, **Python**, **Node**, **PHP**, **Java**, and .**NET** SDKs
- Integrated **Google Pay V2** into the **Android** and **JS** SDKs, adding functionality and increasing returns for GP transactions **2x**
- Introduced **API schema validation** to verify that all additions to our service were well documented
- Started Python tutorial **mentorship**, participated in open source outreach, and promoted **pair programming** and **TDD**
- Reduced loading times for Hosted Field elements on merchant checkouts by 30x in slow network conditions

Revenew — Digital marketing startup bought by Aprimo — **2015**

Devs Ops & Software Engineering Intern

- Decreased analysis duration of 14k sites' traffic data by **120x** through **Piwik** open source contributions
- Wrote tools to allow **Wordpress** instances to be cloned, migrated, and patched automatically, incorporating **Okta** SSO
- Introduced **continuous integration** testing to ensure API reliability during QA and production
- Created proof of concept in-browser video editor to enable clients to easily create co-branded advertisements

Land O'Lakes	Digital solutions for agricultural problems, global feed distribution, and dairy foods co-op	**2013 - 2014**
Project Management & Software Engineering Intern	- Directed development of an internal **iOS app**, including leading **scrum** meetings with an offshore team, problem discovery with stakeholders, fault tolerance **testing**, **documentation**, and user testing - Produced ELMAH client-side error gathering framework for use in live **ASP.NET** applications - Engineered pipeline to scrub existing receipt database while increasing **OCR** readability of ingested data - Hardened login of co-op portal against **XSS** and **SQL injection**, while improving logging and location data collection	

The University of Chicago	**2012 - 2016**
Computer Technician	- Conducted **Tier 1 & 2** technical support for faculty and staff, educating them on best practices and issue avoidance - Performed onsite hardware repair, data recovery, inventory management, documentation, and triage

Skills

Full Stack Development, Jenkins & Travis Continuous Integration, Pair programming, Test Driven Development, SDK Design, Technical Writing, Rails, Linux system management, Android, Web development, Vim & Tmux, Docker, Kubernetes, Language Design, API design, Website ops, Mentoring

Languages

Proficient:	Ruby, Python, Node, Javascript, Java, C# .Net, PHP, C++, Arduino/C, Bash/Zsh, R, SQL, Clojure
Familiar:	Golang, Objective-C, OpenGL / GLSL, Haskell / ML Family, Assembly (6502 & x86), Perl, Yacc, awk, sed, G-code

Projects

Personal Projects	https://github.com/jackellenberger/
Emojme	An improvement on my work on emojipacks, with a complete rewrite adding bulk **emoji** download, upload, syncing, and statistics through a reverse engineered undocumented slack api endpoint. Published both as an **npm module** and a command line tool, Emojme allows me to keep **28,000 emoji** synced across multiple slack instances, and has (I believe) been instrumental in forcing Slack to rewrite their /customize page several times over the last few years.
Emojme related	infinite-emoji-discord-bot, a Discord bot to dynamically import Slack emoji to discord as they become necessary. emojme-emoji-anywhere, a Chrome extension to allow reading and writing of Slack emoji on any site. emojme-hubot-plugin, a Hubot extension to allow for more feature rich emoji interaction in Slack.
Slack Yaml Manager	A hybrid **Slackbot** and standalone program to allow Slack users create, edit, and run arbitrary jobs based on a shared yaml schema.
TEAAS	A site to apply useful transformations to basic emoji. My role was to improve the post-creation experience, allowing users to download the emoji they create or upload them directly to slack.
DiscordBot	A bot to trick **Discord** into allowing me to have all my 22k **emoji**, despite their 50 emoji limit. It scans messages for emoji usages, refrerences against known emoji, and inserts the emoji as you use them, using a circular buffer to remove least-recently-used emoji to make room.
html-to-text	A highly extensible **parser**, improved upon to better handle complex tables present in Braintree's **developer docs**. Used as part of Braintree's **federated search** parser.
YamlLineNumbers	A lightweight library to surface source line numbers in parsed **ruby** hashes, used extensively internally to help identify and resolve issues with **kubernetes configs**, static allowlist/blocklists, and programmatic documentation.
HaskelCsvMuncher	A completely overwrought way to convert csv documents into more useful docs. For example, converting this resume into a markdown document for applications, plaintext for linkedin, and html for ellenberger.zone
Awesome-o	A stateless Slackbot for parsing Trello boards, tracking open source issues, and crawling internal servers to provide a daily digest of to-do's on Slack.
Jabiru Medical	A Northwestern University incubated medical startup in Chicago, involving an **Arduino** powered proof of concept device designed to help pregnant women understand stressors on crucial muscle groups.
Phyllo.apk	An experiment in location based distributed information sharing, essentially Hacker News where articles spread literally as viruses do, from carrier to carrier based on location and proximity. Includes an Android app and Django backend.
ellenberger.zone	A personal website with pages for each of my family members.
FossFazor	A **3D printed** waveguide for Orthodynamic headphones based off the Audeze model, with designs distributed freely and printed parts sold for a fraction of the real thing.
MuLtiplication	A **Python interface** for radioligand binding assays to determine solubility of novel and published Dopamine D2 receptor-like ligands to be used by the Newman Group at the NIH.
ShowProdDehydron	A **3D viewer** for displaying Dehydron distribution in proteins, written in Python.
oGrocer	An **Android app** to crowdsource current food price trends and give consumers complete price knowledge about what to buy, where to buy it, and when best to go.

Gerrymeleon	A **GPGPU** project in its infancy to calculate and solve Efficiency Gap problems created by gerrymandering
University Projects	
C	PintOS Kernel, TCP Protocol, Ray Marching Algorithm, Moving Average Analysis
Standard ML	FLang Compiler
Python	Optical Character Recognition Model, Protein Data Mining Process, Linguistic Analysis HMM
C++	TEC based Ice 3D printer mod, Convolution Neural Network, Basic Game Engine